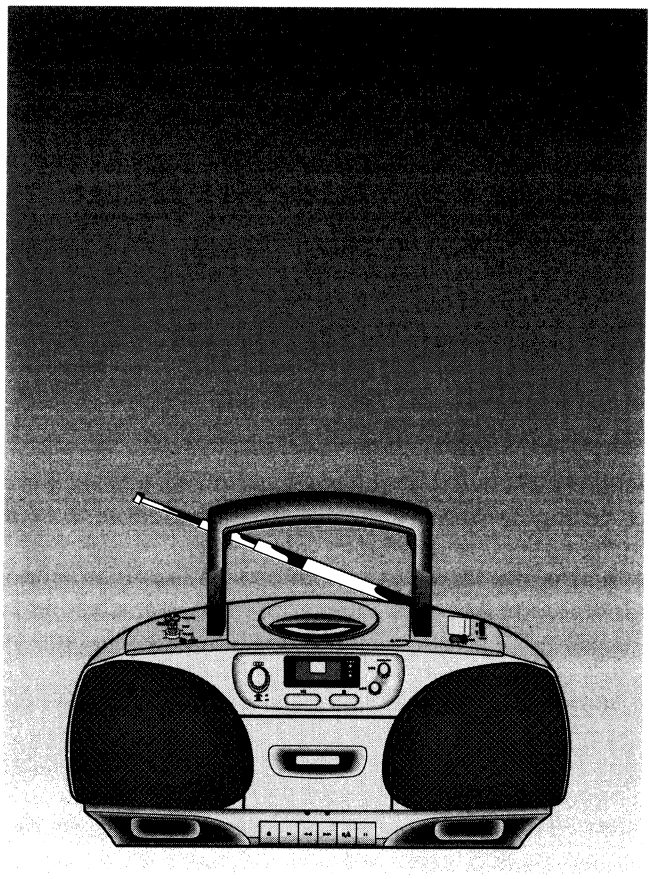
SAMSUNG

RADIO CASSETTE RECORDER CD PLAYER

RCD-750

SERVICE Manual

RADIO CASSETTE RECORDER CD PLAYER



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● Design and specification are subject to change upon improvement without prior notice.

1. Safety precaution

1-1. Class 1 laser product

This laser disc player is classified as a CLASS 1 laser product.

1-2. Laser warning label

The label shown below may be affixed or not according to country.

(UL)

This Product Complies with DHHS Rules 21CFR, Sub chapter J.At date of Manufacture

(CSA)

CERTIFIED ONLY TO CANADIAN ELECTRICAL CODE.

CERTIFIE EN VERTU DU CODE CANADIAN DE LELETRICITE SEULEMENT

(EU)

CLASS 1
LASER PRODUCT

Location: Enclosure back.

(SCAN)

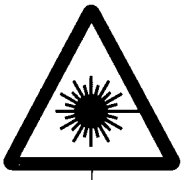
CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATEO AVOIDEXPOSURE TO BEAM

ADVARSEL: USYNLIG LASERSTRÅLING VED ABNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGA UDSAETTELSE FOR STRALING

VARO:AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTINA NAKYMATTÖMALLE LASERSATEILYLLE ALA KATSO SATEESEEN!

VARNING:OSYNLIG LASERSTRÅLNING NAR DENNA DEL AR OPPNAD OCH SPARREN AR URKOPPLAD BETRAKTA EJSTRÅLEN!

(EU)



UL : Manufactured for U.S.A. Market.
CSA : Manufactured for Canadian Market.
EU : Manufactured for European Market.
SCAN : Manufactured for Scandinavian Market.

Location : on the disc clamper or inner side of UNIT door or nearby UNIT chassis.

1-3. Laser beam warning

ADVERSEL –Usynlig saserstråling ved åbning, når Sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

VARNING –Osylig laserstralning när denna del är öppnad och spärr är urkopplad. Stralen är farlig.

VARITUS –Laite sisältää laserdiodin, joka lähettää näkymätönta silmille vaarallista lasersateilyä.

CAUTION –Invisible laser radiation when door is open and interlocks defeate. Avoid exposure to beam.

1-4. Laser diode specification (Optical pick-up)

- Material : GaAs+GaAlAs
- Wavelength : 760-800nm
- Emission duration : Continuous
- Laser Output : 0.2mW
  * This output is the value measured at distance 1.6mm from the objective lens surface on the optical pick-up block.
- Classification : CLASS 1

1-5. Warning for servicing

WARNING: When servicing, do not approach the LASER exit with the eye too closely. In case it is necessary to confirm LASER beam emission, be sure to observe from a distance of more than 30cm from the surface of the objective lens on the optical pick-up block.

VARNING: När underhållningsarbeten utförs, närma dig försiktigt och se inte på laserutstrålningen på för näre häll. If all det är nödvändigt att betrygga laserstrålens utströmning. Var säker att kontrollera detta från ett avstånd av mer än 30cm (11.81 inch.) fråan den objektiva linsens yta på den optiska utsåndningspunkten.

ADVARSEL: När repareringsarbejdet udfoeres, naerm dig forsigtigt og se ikke på laserudstrålingen påa for naer håand. ^t ilfaeldet at det er noedvaendigt at bestemme laserstrålens udstråling. Vaer sikker på kontrollere dette fra en afstand af mere end 30cm (11.81 inch.) fra den objektive linses overflade på den optiske udsendningspunkt.

VAROITUS: Silmiä on varottava viemästä liian läbeile laser-poistokanavaa huoiion aikana. Jos on välttämätöntä varmistaa Laser-Säteen päästö, pysyttels sitä tarkasteltaessa vähintään 30cm etäiyydellä optisen lukon objecktiivilinssin pinnasta..

1-1-6. Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

(1) Be sure that no built-in protective devices are defective or have been defeated during servicing. (1) Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any remove for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.

(2) Be sure that there are no cabinet openings throught which adults or children might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, excessively wide cabinet ventilation slots, and an improperly fitted and/or incorrectly secured cabinet back cover.

(3) Leakage Current Hot Check-With the instrume-nt completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use a isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1270 (40.7). With the instrument's AC switch first in the ON positin and then in the OFF position, measure from a known earth ground (metal waterpipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinets, screwheads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis.

Any current measured must not exceed 0.5 millamp. Reverse the instrument power cord plug in the outlet and repeat the test.

See Figure 1.

Any measurements not within the limits specified herein indicate a potential shock hazard that must be ellminated before returning the instrument to the customer.

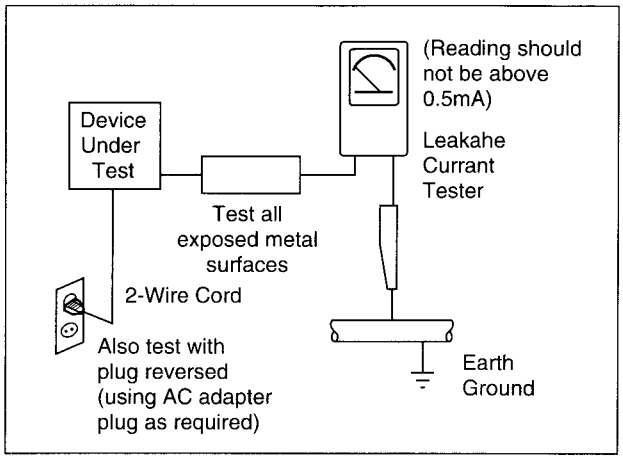

(Reading should not be above 0.5mA)
Device Under Test
Leakahe Currant Tester
Test all exposed metal surfaces
2-Wire Cord
Also test with plug reversed (using AC adapter plug as required)
Earth Ground

FIG. 1 AC Leakage Test

(4) Insulation Resistance Test Cold Check-(1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug. (2) Turn on the power switch of the instrument. (3) Measure the resistance with an ohmmeter between the jumpered AC plug and all exposed metallic cabinet parts on the instrument, such as screwheads, antenna, control shafts, handle brackets, etc. When an exposed metallic part has a return path to the chassis, the reading should be between 1 and 5.2 megohm. When there is no return path to the chassis, the reading must be infinite. If the reading is not within the limits specified, there is the possibility of a shock hazard, and the instrument must be repared and rechecked before it is returned to the customer.

See Figure 2.

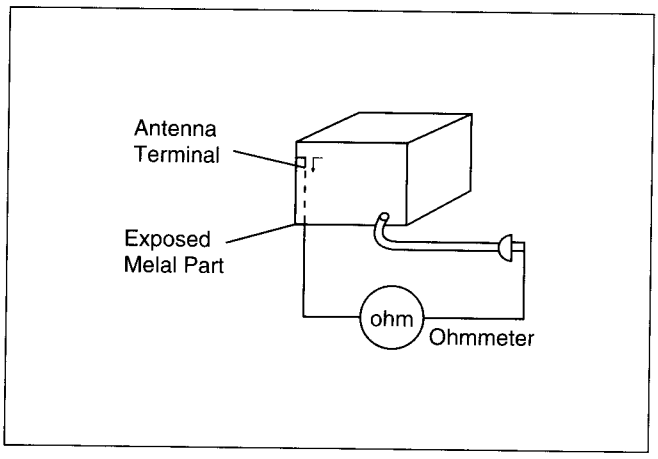


FIG. 2 Insulation Resistance Test

1-1-7. Read and comply with all caution and safety-related notes non or inside the cabinet, or on the chassis.

1-1-8. Design Afteration Warning-Do not alter or add to the mechanical or electrical design of this instrument. Design alterations and additions, including but not limited to, circuit modifications and the addition of items such as auxiliary audio output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions will make you, the servicer, responsible for personal injury or property damage resulting therefrom.

1-1-9. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: (1) near sharp edges, (2) near thermally hot parts (be sure that leads and components do not touch thermally hot parts), (3) the AC supply, (4) high voltage, and (5) antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring. Do not change spacing between a component and the printed-circuit board. Check the AC power cord for damage.

1-1-10. Components, parts, and/or wiring that appear to have overheated or that are otherwise damaged should be replaced with components, parts and/or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

1-1-11. Product Safety Notice-Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by shading, an (*) or a ( ) on sc-hematisc and parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might created shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

2. Servicing notes

2-1. Before servicing the unit

Be sure to observe the safety notes attached on label, chassis, cabinet top, cabinet bottom and printed circuit board.

2-1-1. Caution on laser beammalfunction

Do not try to access objective lens, when DISC is not on the tray.

When pick-up mechanism replacement is required, be sure to turn power off.

2-1-2. When handling parts

Tube, tape or insulating parts are used for sepa-ration or insulation purposes. Especially parts which generate excessive heat are kept away from PCB or any other sensitive parts. Therefore, when replacing parts, be sure to replace them in their original position.

2-1-3. When fixing wires

Wires should be fixed in such a way with cable-tie so they won't move.

When finished servicing, be sure to leave unit in it's original configuration.

2-1-4. Use specified parts only

The safety specification built into the electronics of this unit require that you use specified parts only. Do not use any other replacements. Using other parts can result in electrical and fire hazard.

2-1-5. After servicing is complete

After servicing is complete, check if there are any missing parts or that wires are properly fixed and any place where over heating or shock is likely to occur, can be found.

2-1-6. Handling the optical pick-up

* The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.

(1) Place a conductive sheet on the work bench (The black sheet used for wrapping repair parts.)

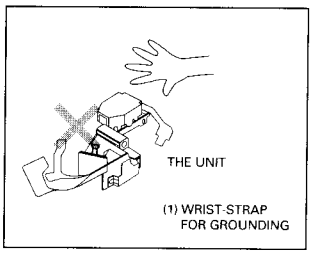
(2) Place the set on the conductive sheet so that the chassis is grounded to the sheet.

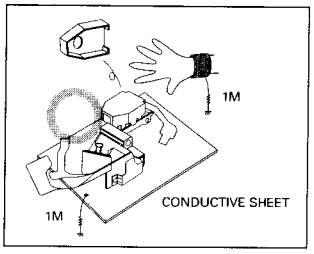
(3) Place your hands on the conductive sheet (This gives them the same ground as the sheet).

(4) Remove the optical pick up block.

(5) Perform work on top of the conductive sheet. Be careful not to let your clothes or any other static sources to touch the unit.

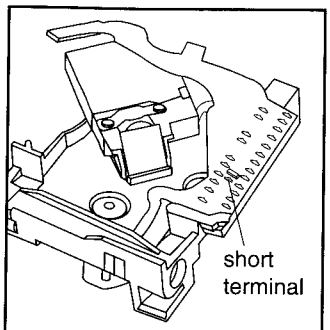
* Be sure to put on a wrist strap grounded to the sheet.
* Be sure to lay a conductive sheet made of copper etc. which is grounded to the table.



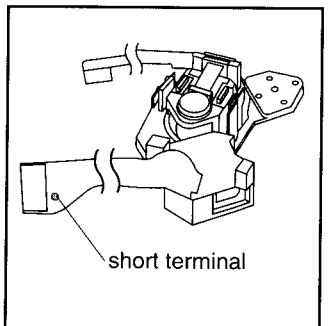


(6) Short the short terminal on the PCB, which is inside the Pick-Up ASS'Y, before replacing the Pick-Up.
(The short terminal is shorted when the Pick-Up Ass'y is being lifted or moved.)

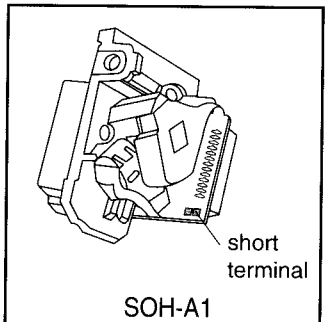
(7) After replacing the Pick-up, open the short terminal on the PCB.



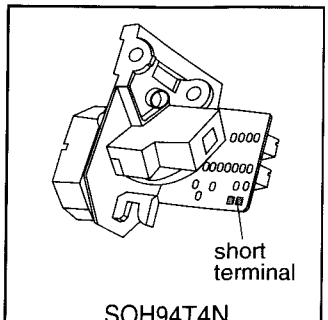
SOH91VI(LDP)



SOH91CI(CAR,walkman)



SOH-A1
(CMS-V10,CMS-V30)



SOH94T4N
(CMS-V10,CMS-V30)

2-2. Servicing Precautions

CAUTION: Before servicing Instruments covered by this service manual and its supplements, read and follow the Safety Precautions section of this manual.

Note: If unforseen circument create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.
Remember: Safety First.

2-2-1. General Servicing Precautions

(1) a. Always unplug the instrument's AC power cord from the AC power source before (1) removing or reinstalling any component, circuit board, module or any other instrument assembly, (2) disconnecting any instrument electrical plug or other electrical connection, (3) connecting a test substitute in parallel with an electrolytic capacitor in the instrument.

b. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.

c. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.

d. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the test instrument positive lead.
Always remove the test instrument ground lead last.

Note: Refer to the Safety Precautions section ground lead last.

(2) The service precautions are indicated or printed on the cabinet, chassis or components. When servicing, follow the printed or indicated service precautions and service materials.

(3) The components used in the unit have a specified flame resistance and dielectric strength. When replacing components, use components which have the same ratings. Components identified by shading, by (*) or by (⚠) in the circuit diagram are important for safety or for the characteristics of the unit. Always replace them with the exact replacement components.

(4) An insulation tube or tape is sometimes used and some components are raised above the printed wiling board for safety. The internal wiring is sometimes clamped to prevent contact with heating components. Install such elements as they were.

(5) After servicing, always check that the removed screws, corponents, and wiring have been installed correctly and that the portion around the serviced part has not been damaged and so on. Further, check the insulation between the blades of the attachment plug and accessible conductive parts.

2-2-2. Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power ON. Connect the insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts (see note) should be more than 1 Megohm.

Note: Accesible conductive parts include metal panels, input terminals, earphone jacks, etc.

2-3. ESD, Precautions

Electrostatically SensitiveDevices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity.
Such components commonly are called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

(1) Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic aharge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

(2) After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

(3) Use only a grounded-tip soldering iron to solder or unsolder ESD devices.

(4) Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.

(5) Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damge ESD devices.

(6) Do not remove a replacement ESD device from its protective package until immediately before your are ready to install it. (Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).

(7) Immediately before removing the protective materials from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

(8) Minimize bodily motions when handling unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

3. Chip replacement

3-1. Precaution for the Chip Replacement

(1) Do not touch the part body directly with the soldering iron. ICS, especially TSOP, are easily damaged by heat.
(2) Use care regarding soldering iron tip and avoid rapidly heating parts. Some parts can be damaged by sudden heating. Preheat the part at about 100°C for several minutes before installing it.
(3) Use soldering tip temperature of about 240°C or larger parts, use a slightly higher temperature (about 280°C).
(4) The thin (0.3mm) solder for miniature parts does not contain adequate flux. Supplementary flux is thus needed in most cases.

The NoteMaster 486S/25N series systems are manufactured using flux which can be cleaned by water in the factory. When your replace the part or troubleshooting, use proper flux and solder which can be cleaned by water. Soldering area will corrode, if proper flux and solder are not used in replace. And it may cause a fatal error to the system.

(5) Use care not to damage the circuit pattern, especially when removing.
(6) Because of the many pins, cleanliness of the pattern is extremely important after removing the IC.
(7) Use care to avoid solder bridges. Remove any that occurs.
(8) Position the part carefully. This will also affect the soldering operation. Be very precise in positioning the IC. Soldering opposite pins first holds the IC in place and makes soldering the other pins easier.
(9) Do not reuse removed parts.
(10) Check for solder joints, especially miniature parts with small lead.
(11) A defective trimming resistor cannot be adjusted externally. Replace with an ordinary variable resistor.
(12) It is important to inspect the work with a magnifier. Check after installing (cold solder joints, etc).

3-2. Tools for the Chip Replacement

The tools for the chip replacement are as follows:

(1) Thin tip type soldering iron
(2) Small flat-blade tip type soldering iron
(3) Special desoldering tip iron
(4) Airblower unit
(5) Flat Package Pick-up
(6) Flux can be cleaned by water
(7) 0.3mm thin solder can be cleaned by water
(8) Desoldering wire
(9) Tweezers

3-3. Chip Resistors and Chip Capacitors

3-3-1. Kind jof the Part

The kind of chip resistors and chip capacitors as follows

(1) Thick Film Chip Resistors
(2) Carbon Film Chip Resistors
(3) Metal Film Chip Resistors
(4) Chip Ceramic Capacitors
(5) Chip Trimming Resistors

3-3-2. Removing the Part

The kind of chip resistors and chip capacitors as follows

(1) Using two soldering irons:
① Use thin tip soldering irons.
② Use soldering tip temperature of about 280°C
③ Simultaneously heat both ends of the part.
④ While heating, grasp the part with the tips of the soldering irons and remove it.
⑤ Use desoldering wire to completely remove the old solder from the part location of the board.
⑥ A clean pattern for installing the new part is very important.

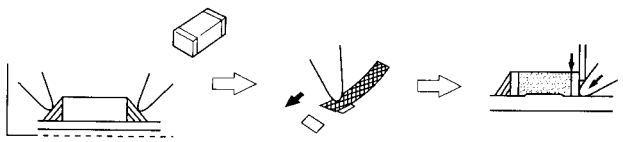


FIG. 4

3-3-3. Installing the Part

(1) Clean the area where the new part is to be mounted.
(2) Apply flux.
(3) Set part correctly into position, prevent it from shifting.
(4) Bring the soldering iron tip close to the part contact without actually touching it. Melt thin (0.3mm) solder between the tip and part so that it flows into the part contact.
(5) Check work quality with a magnifier.

3-4. Chip Tantalum Capacitors and Chip Filters

3-4-1. Kind of the Part

The kind of chip tantalum capacitors and chip filters are as follows:

(1) Chip Inductors
(2) Chip Tantalum Capacitors
(3) Chip Tantalum Electrolytic Capacitors
(4) Chip Aluminum Electrolytic Capacitors
(5) Chip Transformers
(6) Chip Filters

3-4-2. Removing the Part

(1) Using special desoldering iron:
① Select soldering tip according to part size.
② Bring the tip into contact with the soldered points.
③ When the solder melts, remove the part.
④Remove the old solder with desoldering wire.

(1) Using two soldering irons:
① Use small flat-blade tips.
② Heat both ends of the part simultaneously.
③ When the solder melts, grasp and remove the part with the soldering iron tips.
④ Remove the old solder with desoldering wire.

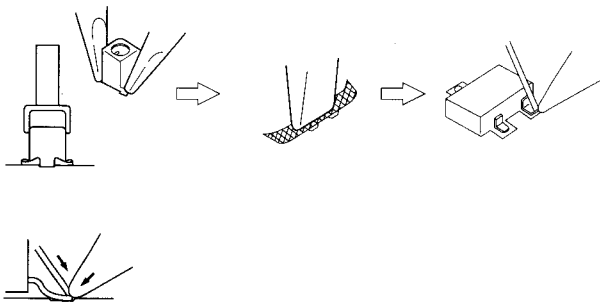


FIG. 5

3-4-3. Installing the Part

(1) Clean the area where the new part is to be mounted.
(2) Apply flux
(3) In part correctly into position, prevent it from shifting.
(4) Use sharp soldering iron tip. Bring close to the part contact without actually touching it. Melt thin solder between the tip and part so that if flows into the part contact.
(5) Check work quality with a magnifier.

3-5. Chip VRs, Chip Trimmer Capacitors, Diodes and Tr.

3-5-1. Kind of the Part

The kind of the part is as follows:

(1) Chip VRs
(2) Chip Trimmer Capacitors
(3) Diode
(4) Transistors

3-5-2. Removing the Part

(1) Using two soldering irons:
① Use small flat-blade tips.
② Heat the leads of the part simultaneously.
③ When the solder melts, grasp and remove the part with the soldering iron tips.
④ Remove the old solder with desoldering wire.

3-5-3. Installing the Part

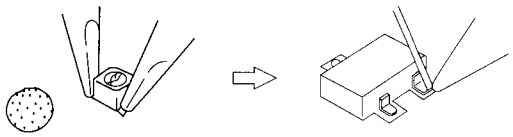


FIG. 6

(1) Clean the area where the new part is to be mounted.
(2) Apply flux
(3) Set part correctly into position, prevent it from shifting.
(4) Use sharp soldering iron tip. Bring close to the part contact without actually touching it. Melt thin solder between the tip and part so that it flows into the part contact.

3-6. Chip ICs

3-6-1. The kind of the Chip ICs

The kind of the chip ICs are as follows:

(1) SOP (Small Outline Package) IC
(2) SSOP (Shrink Small Outline Package) IC
(3) VSOP (Very Small Outline Package) IC
(4) QFP (Quad Flat Package) IC
(5) VQFP (Very Quad Flat Package) IC
(6) PLCC (Plastic Leaded Chip Carrier) IC
(7) TSOP (Thin Small Outline Package) IC

3-6-2. Removing the Part

(1) Using special desoldering iron:
① Select the tip according to the size and shape of the IC.
② Thin" the tip with a small amount of the IC leads.
③ Set the tip squarely over the IC leads.
④ When the solder melts, carefully twist the iron.
⑤ Raise and remove the IC.

(2) Using shaped airblower unit:
① Select the correct nozzle.
② Select the temperature and airblow (suggested: temperature: 7, airblow: 4)
③ Engage the IC removing tool.
④ Use the airblow to preheat the IC for about 5 seconds, then heat with the nozzle until the IC remover lifts the part from the board.

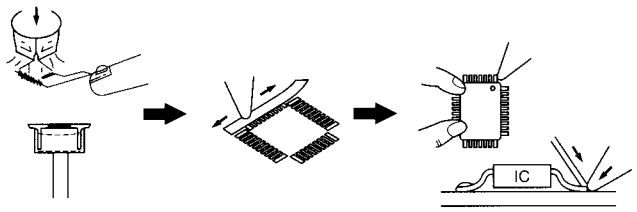


FIG. 7

3-6-3. Installing the Part

(1) Use desoldering wire to remove the previous older.
(2) Clean the location.
(3) Apply flux.
(4) Position the IC and solder two pins at opposite sides.
(5) Use a sharp tipped soldering iron and carefully solder each pin. (After graining experience, a thicke tip can be used for better work efficiency.)
(6) Remove any solder bridges with desoldering wire.
(7) Inspect the work with a magnifier.

2. Specification

2-1. General section

(1) Frequency response ..... 20~20000Hz
(2) Speakers ..... Woofer : ø 100mm x 2 (4Ω)

(3) Power source ..... AC : See label rating
DC : 9V (D, RM1, HP2 X 6)

(4) Output power ..... 2.0W x 2
(5) Power consumption 13W
(6) Dimension ..... 445(W)mm x 201(H)mm x 226(D)mm
(7) Weight 4.1Kg
(8) Headphone jack ..... 3.5mm(stereo)

2-2. Tape recorder

(1) Frequency response ..... 63Hz ~ 12.5KHz
(2) Signal to noise ratio 40dB

(3) Separation 33dB
(4) Total harmonic distortion 2%
(5) Erasing effect 65dB

2-3. Radio section

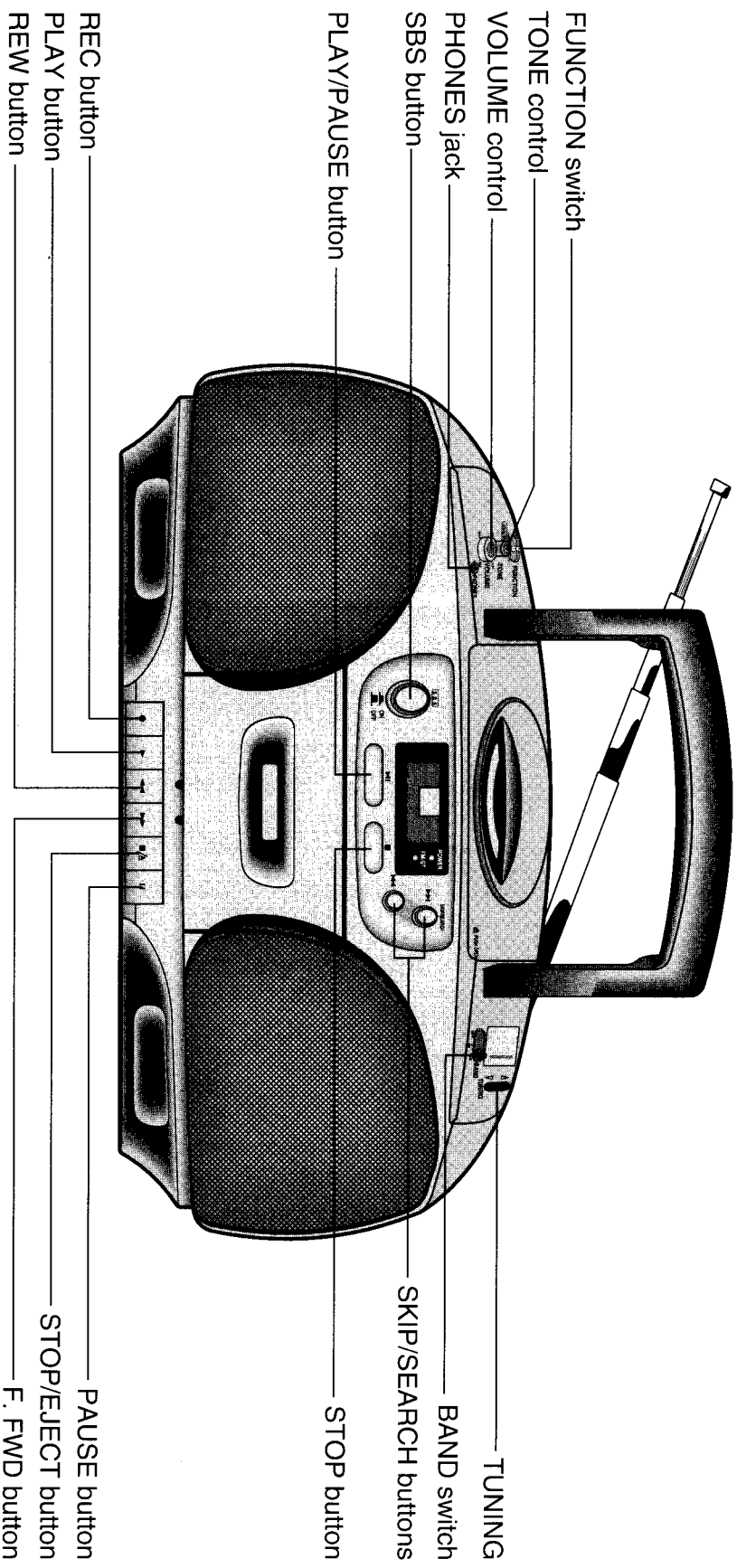
(1) Frequency range ..... FM : 88 ~ 108MHz
AM : 530 ~ 1710KHz
530 ~ 1610KHz
(2) I.F ..... FM : 10.7MHz
AM : 455KHz/465KHz (OPTION)
(3) Antenna ..... FM : Telescopic rod antenna
AM : Ferrite bar antenna

2-4. Compact disc player

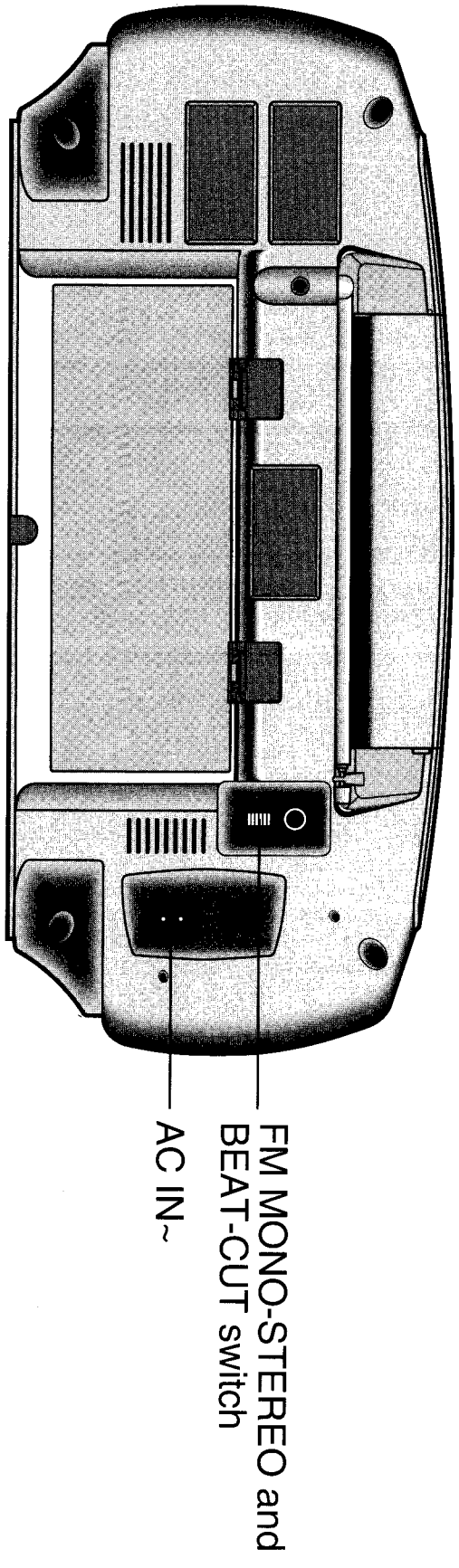
(1) Frequency range ..... 20 ~ 20000Hz
(2) Signal to Noise ratio ..... 82 dB (With HPF400Hz or LPF30KHz)
(3) D/A conversion ..... 16 bits
(4) Channel separation ..... 70dB (1KHz) (with LPF for 30KHz)

3. Location of controls

3-1. Front view



3-2. Rear view

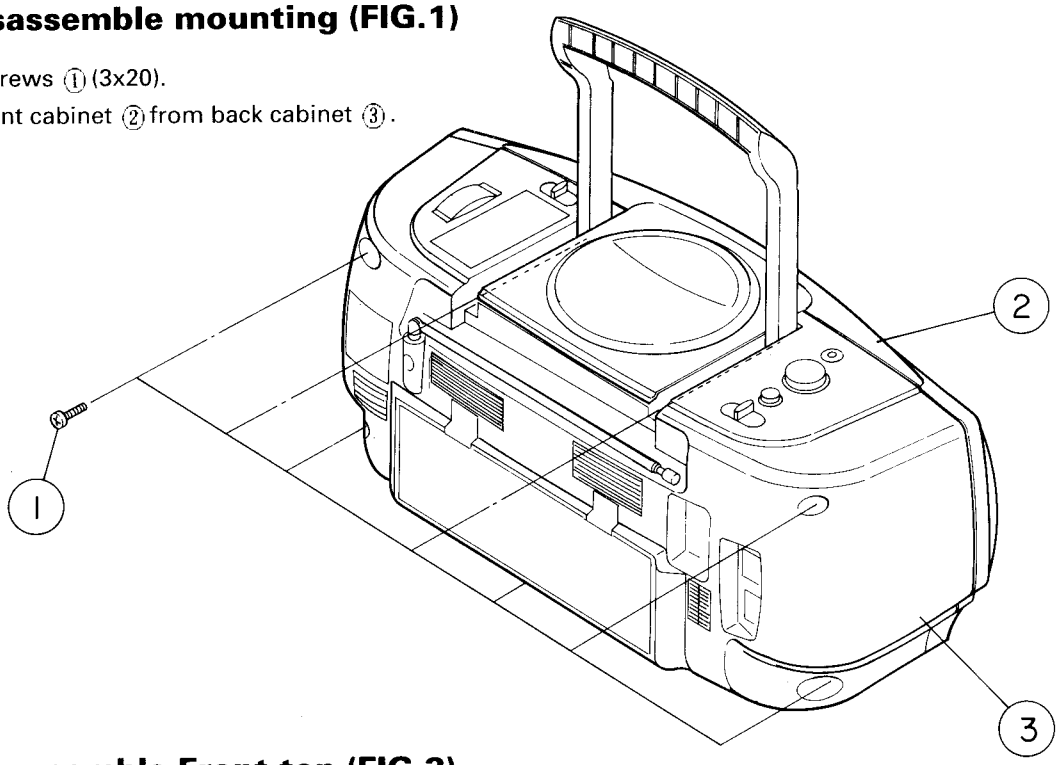


4. Disassembly instruction

* Before disassembling the unit, remove batteries and AC power cord.

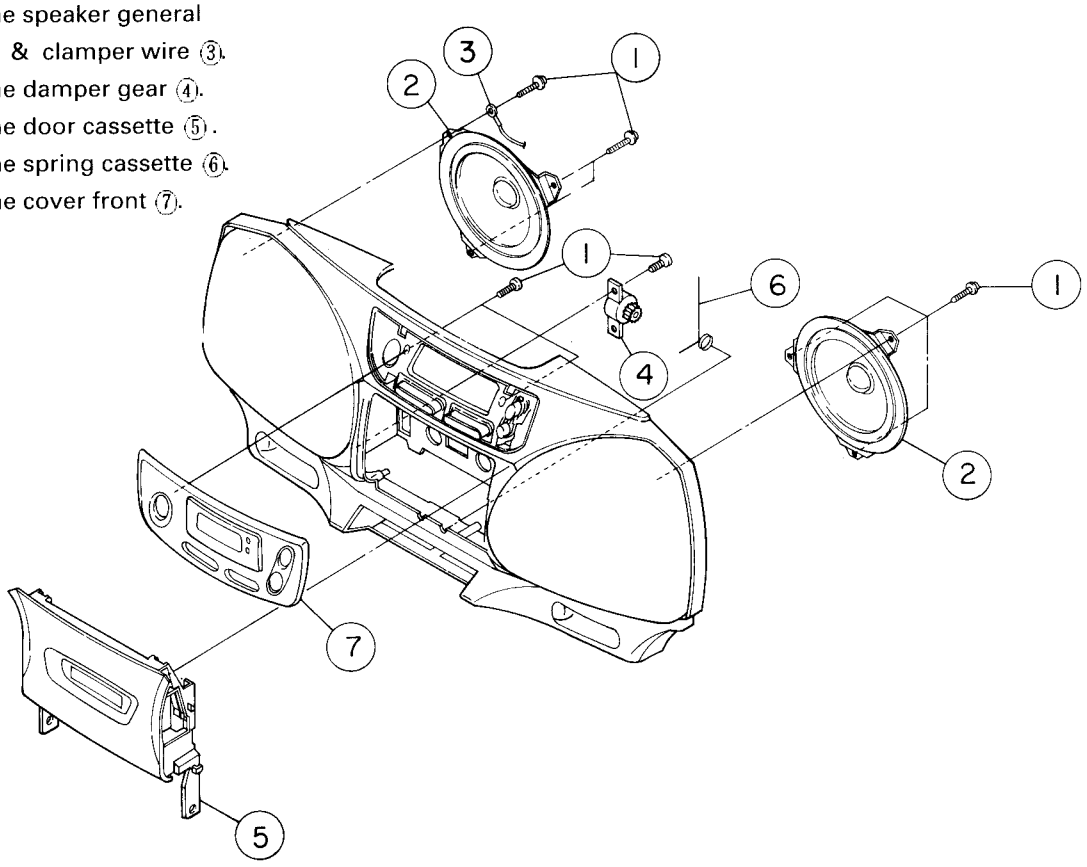
4-1. How to disassemble mounting (FIG.1)

4-1-1. Release the 7 screws ① (3x20).
4-1-2. Seperate the front cabinet ② from back cabinet ③.



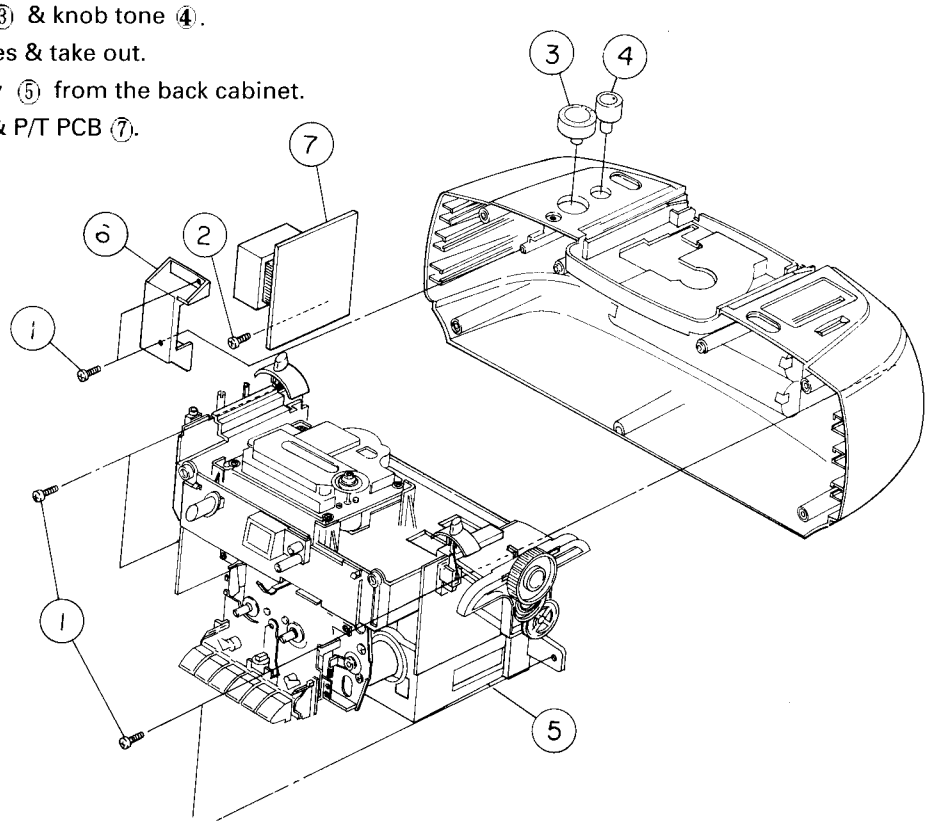
4-2. How to disassemble Front-top (FIG.2)

4-1-1. Release the 9 screws ① (3x10).
4-1-2. Remove the speaker general
& clamper wire ③.
4-1-3. Remove the damper gear ④.
4-1-4. Remove the door cassette ⑤.
4-1-5. Remove the spring cassette ⑥.
4-1-6. Remove the cover front ⑦.



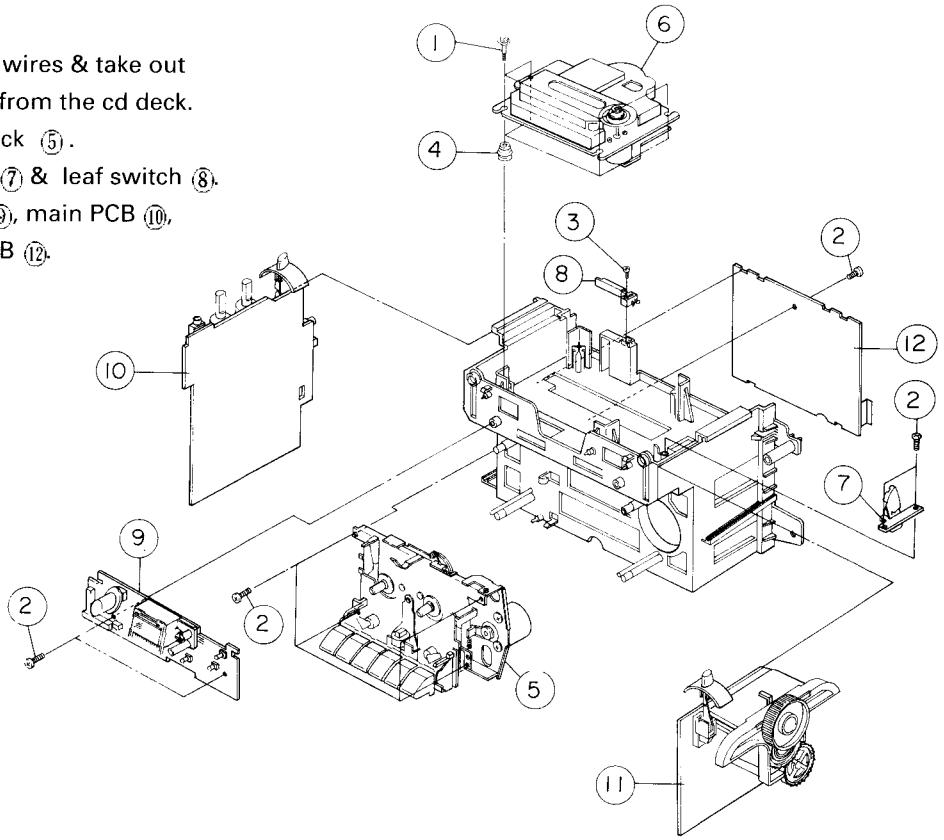
4-3. How to disassemble back-cabinet (FIG.3)

4-3-1. Release the 6 screws ① and 1 screws ②.
4-3-2. Remove the knob volume ③ & knob tone ④.
4-3-3. Disconnect connecting wires & take out.
4-3-4. Remove main chassis ass'y ⑤ from the back cabinet.
4-3-5. Remove the holder P/T ⑥ & P/T PCB ⑦.



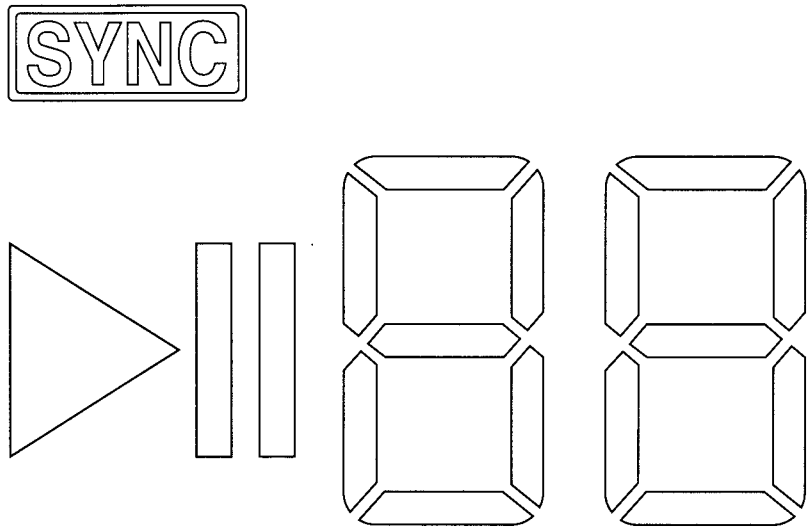
4-4. How to disassemble Chassis (FIG.4)

4-4-1. Release the 4 cd shafts ①.
4-4-2. Release the 9 screws ②.
4-4-3. Release the 1 screw ③.
4-4-4. Disconnect connection wires & take out
4-4-5. Remove 4 cd rubber ④ from the cd deck.
4-4-6. Remove the cassette deck ⑤.
4-4-7. Remove the latch ass'y ⑦ & leaf switch ⑧.
4-4-8. Remove the front PCB ⑨, main PCB ⑩, tuner PCB ⑪ and CD PCB ⑫.



5. Basic circuit operation

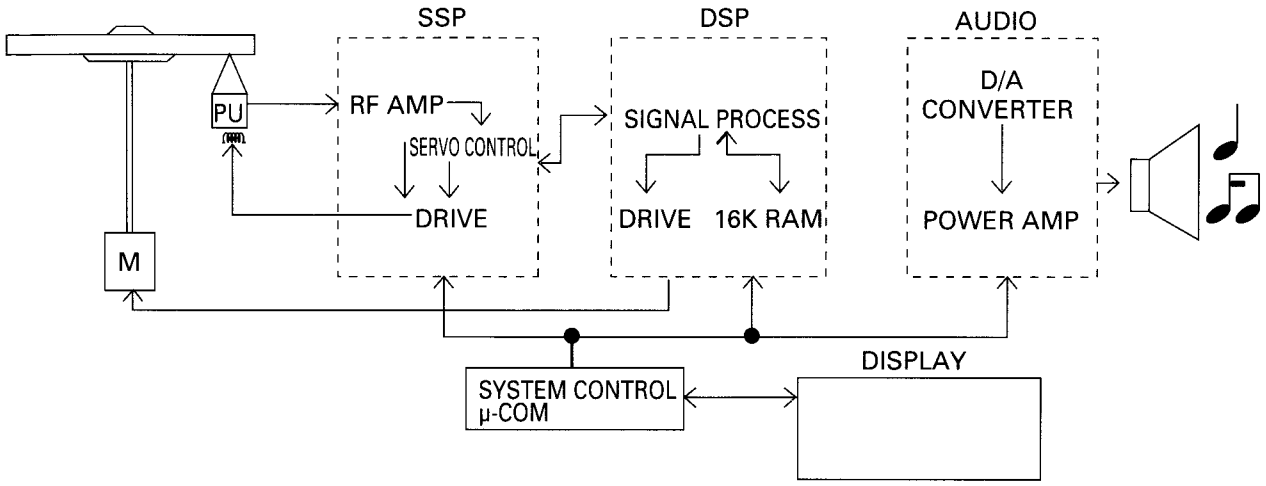
5-1. Description of LCD segments



	1	2	3	4	5	6	7	8	9	10
COM1	COM1	/	/	HI-SYNC	1F	1A	SYNC	2F	2A	
COM2	/	COM2	/	▷	1E	1G	/	2E	2G	
COM3	/	/	COM3	‖	1D	1C	1B	2D	2C	2B

5-2. CDP basic circut operation

(1) CDP block diagram

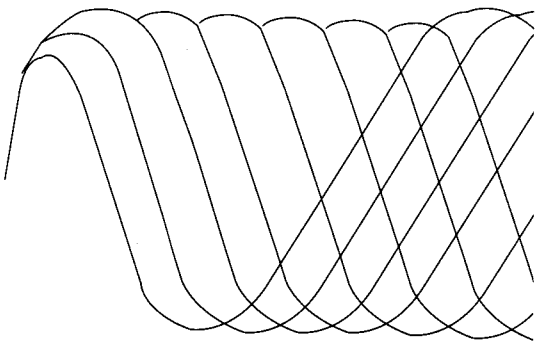


(2) OPTICAL PICK-UP UNIT

CD system use laser beam to detect the signals recorded onto the dics.
The pick-up detects the presence or absence of data pits on the disc surface, emitting laser beam capable of being incorporated into the pick up and converting signals from the disc into electrical signals.

(3) RF AMPLIFIER

After the optical pick up detects the presence or absence of data pits on the disc surface the resulting signals refered to as RF or Eye pattern are not apparent and quite similiar to the sine waveform.
The signal waveform varies depending on the length and width of each pit on a disc surface. The RF signals can hardly be seen on screen. The eyepattern are first amplified by the RF amplifier, and then demodulated by using the EFM code (Eight to Fourteen Modulation ; 8bits..... 14bits modulation)



EYE PATTERN

(4) FOCUS AND TRACKING SERVO

(1) FOCUSING SERVO : It vertically shifts the objective lense so that the beam correctly fall on the disc surface to read out the data recordeda on the disc.

(2) TRACKING SERVO : It controls the objective lense to maintain proper tracking.

① Normal Tracking Servo: it shifts the objective lense for proper tracking (1.6 μm).
② Feed Servo : it shifts the optical pick up itself for tracking.

(5) DSP (Digital signal Processor)

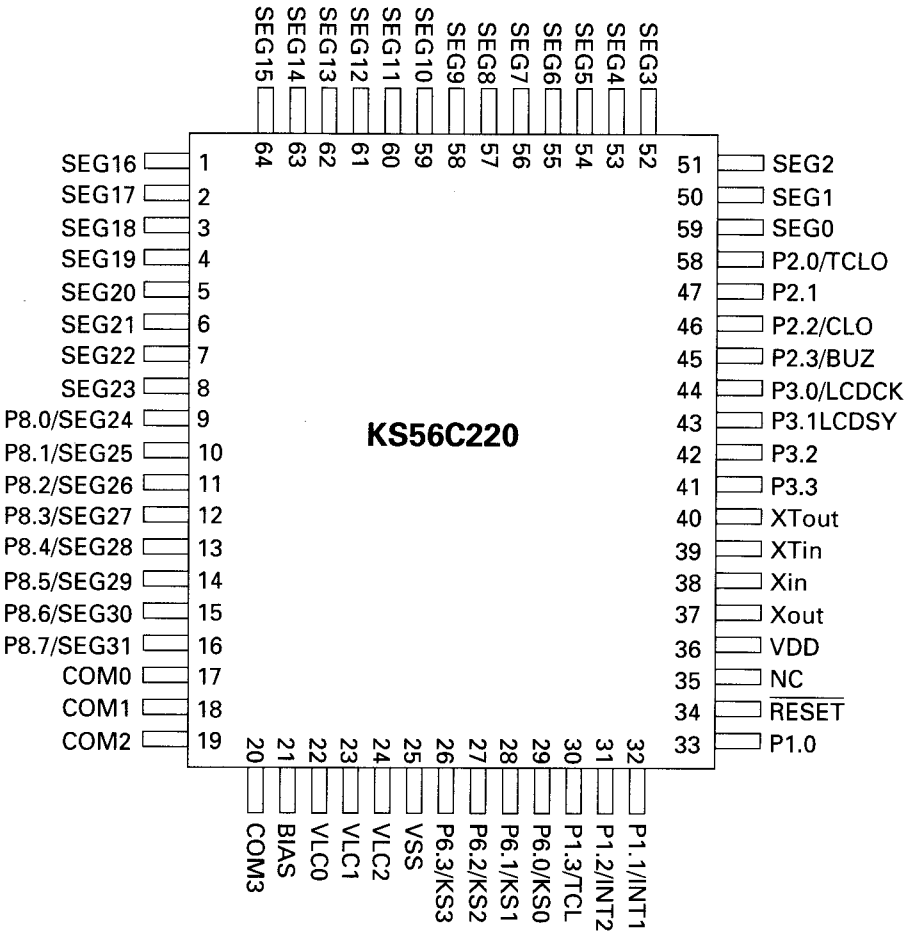
DSP(Digital Signal Processor) is basically composed of the EFM(Eight to Fourteen Modulation) decoder and Error Correction System.
The EFM decoder converts the serial 14 bit EFM code to an 8 bit parallel code which is directed to a bi-directional bus and placed in the RAM. The contents of the RAM are read by the Error Detection Circuit. The Error Detection Circuit extracts the interleaved data samples so that the signal is deinterleaved and detects most of the errors present in the present in the signal dued to flaws on the disc.
The decoded signal, with error correction, is output from the Memory Control circuit in a 16 bit serial code and directed to the D/A Converter. The Memory circuit also output a signal, derived from the Clock, which denotes the linear velocity of the disc. These signals are directed to the CLV (Constant Linear Velocity) circuit to correct any error in the disc speed.

(6) D/A CONVERTER

The signal output from the Memory Control in the Error Correction circuit is a serial 16 Bit NRZ (Non-Rerurn to Zero), error corrected and de-interleaved digital code. The signal must now be converted to an analog signal suitable for application to a stereo pre-amplifier. This is the function of the D/A (Digital to Analog) Converter and Analog Amplifier.

5-3. IC pin description

• KS 56C220



Pin Name	Share Pin	Input/ Output	Function	Reset Condition	I/O CKT Type
P1.0 P1.1 P1.2 P1.3	— INT1 INT2 TCL	Input	4-bit input port. 1 or 4-bit read/test possible. 4-bit unit pull-up resistors selectable by software.	Input	C
P2.0 P2.1 P2.2 P2.3	TCLO — CLO BUZ	I/O	4-bit I/O port. 1 or 4-bit read/write/test possible. 4-bit unit pull-up resistors selectable by software.	Input	D - A
P3.0 P3.1 P3.2 P3.3	LCDCK LCDSY — —	I/O	4-bit I/O port. Each individual pin can be specified as input or output. 4-bit unit pull-up resistors selectable by software. (Note)	Input	D - A
P6.0 P6.1 P6.2 P6.3	KS0 KS1 KS2 KS3	I/O	4-bit I/O port. Each individual pin can be specified as input or output. 1 or 4-bit read/write/test possible. 4-bit unit pull-up resistors selectable by software. (Note)	Input	D - B
P8.0 - P8.7	SEG24 -SEG31	Output	1-bit controllable output. (Dual function as segment output)	Low Level	F - 3

Pin Name	Share Pin	Input/ Output	Pin Description	Reset Condition	I/O CKT Type
SEG0 - SEG23		Output	LCD segment display signal output.	Low Level	F - 1
SEG24 - SEG31	P8.0 - P8.7	Output	LCD segment display signal output.	Low Level	F - 3
COM0 - COM3		Output	LCD common signal output.	Low Level	F - 2
V_{LC0} - V_{LC2}		—	LCD power supply. Voltage dividing internal resistors can be provided by mask option.	Low Level	
BIAS		—	LCD power control.	Low Level	
LCDCK	P3.0	I/O	LCD clock output for display expansion.	Input	D - A
LCDSY	P3.1	I/O	LCD synchronization clock output for LCD display expansion.	Input	D - A
TCL	P1.3	Input	Timer/counter external clock input.	Input	C
TCLO	P2.0	I/O	Timer/counter clock output.	Input	D - A
INT1	P1.1	Input	External interrupt input. Triggering edge selectable.	Input	C
INT2	P1.2	Input	Quasi-interrupt input for external rising edge detection.	Input	C
KS0 - KS3	P6.0 - P6.3	I/O	Quasi-interrupt input for external falling edge detection.	Input	D - B
CLO	P2.2	I/O	Clock output.	Input	D - A
BUZ	P2.3	I/O	2 KHz or 4 KHz clock output pin for buzzer sound.	Input	D - A
Xin, Xout	—		Crystal/ceramic/ RC clock I/O for main-system clock.		
XTin, XTout	—		Crystal clock I/O pins for sub-system clock.		
$\overline{\text{RESET}}$	—	Input	$\overline{\text{RESET}}$ input (Active low).		B
V_{DD}	—		Power supply.		
V_{SS}	—		Ground.		
NC	—		No connection : must be connected to V_{SS}		

● DRIVE (KA9258D) (NIC 9258)

Pin No.	Symbol	I/O	Descrition
1	DO 1.1	O	DRIVE Output
2	DO 1.2	O	DRIVE Output
3	DI 1.1	I	DIRVE Input
4	DI 1.2	I	DIRVE Input
5	REG		Regulator
6	REO	O	Regulator output
7	MUTE		MUTE
8	GND 1		Ground
9	DI 2.1	I	DRIVE Input
10	DI 2.2	I	DRIVE Input
11	DO 2.1	O	DRIVE Output
12	DO 2.2	O	DRIVE Output
13	GND 2		Ground
14	OP OUT	O	OP AMP Output
15	OP IN	I	OP AMP Input (-)
16	OP IN	I	OP AMP Input (+)
17	DO 3.1	O	DRIVE Ouput
18	DO 3.2	O	DRIVE Ouput
19	DI 3.1	I	DRIVE Input
20	DI 3.2	I	DRIVE Input
21	VCC 1		Supply voltage
22	VCC 2		Supply voltage
23	VREF		2.5V BIAS Voltage
24	DI 4.1	I	DRIVE Input
25	DI 4.2	I	DRIVE Input
26	DO 4.1	O	DRIVE Output
27	DO 4.2	O	DRIVE Output
28	GND		Ground

● AUDIO FILTER (KA9270) (NIC 9270)

Pin No.	Symbol	I/O	Description
1	GND	-	Ground
2	L OUT 1	O	Output pin of LPF 1
3	L IN 1	I	Input pin of LPF 1
4	MUTE	I	Mute control input pin
5	DE-EM	I	De-emphasis control pin
6	DE-EM CTL 1	I	De-emphasis control 1
7	DE-EM IN 1	O	De-emphasis output pin 1
8	DE-EM IN 1	I	De-emphasis input pin 1

Pin No.	Symbol	I/O	Description
9	B-OUT 1	O	Output pin of buffer 1
10	B-IN 1	I	Input pin of buffer 1
11	B-IN 2	I	Input pin of buffer 2
12	B-OUT 2	O	Output pin of buffer 2
13	DE-EM IN 2	I	De-emphasis input pin 2
14	DE-EM OUT 2	O	De-emphasis output pin 2
15	DE-EM CTL 2	I	De-emphasis control 2
16	RIPPLE	-	Input pin of ripple eliminate
17	VREF	-	Output pin of VREF (1/2 VCC)
18	L IN 2	I	Input pin of LPF 2
19	L OUT 2	O	Output pin of LPF 2
20	VCC	-	Input of VCC

• ASSP (KA9220) (NIC 9220)

Pin No.	Symbol	I/O	Description
1	AVEE (R)		Analog negative power supply input pin for RF part
2	CPH	I	Capacitor connection pin of mirror hold.
3	CBH	I	Capacitor connection pin of defect bottom-hold
4	TESTD	O	Defect test pin
5	TESTM	O	Mirror test pin
6	Test 1		Input pin of test
7	PFSET		Peak frequency setting pin for focus, tracking compensation and fc (cut off frequency) of CLV LPF.
8	SSTOP	I	Check the position pin of pick-up whether inside or not.
9	DIRC	I	Direct 1 Track Jump Control Pin
10	AVCC (S)		Analog positive power supply input pin for SERVO part.
11	WDCH		Auto-sequencer clock-input pin (Normal speed = 88.2KHz, Double speed = 176.4KHz)
12	SMPD	I	Connection pin of DSP SMPD
13	SMON	I	Connection pin of DSP SMON, spindle servo ON at "H"
14	N/C		No connection pin
15	TGSW	I	Providing time constant to change the high frequency tracking gain
16	RTG	I	Capacitor connection pin to switch the tracking gain of high frequency
17	LFR	I	Capacitor connection pin to perform rising low bandwidth of focus servo loop
18	FSW		High frequency gain of focus servo loop can be changed by FS3 switch ON or OFF

Pin No.	Symbol	I/O	Description
20	FSCH	O	Time constant external pin to generate focus search waveform
21	VREGI	I	External regulator voltage input pin for VCO
22	ISET		Determing the peak value of focus search, track jump and SLED kick
23	VREG	O	3.5V Regulator output pin
24	FVC	I	Pin connected external resistor to adjust free running frequency of VCO
25	SMEF	I	Providing an external LPF time constant of CLV SERVO Loop
26	BPF	I	Providing time constant for Loop filter of VCO
27	MCK	I	Clock input pin from micom
28	MLT	I	Latch input pin from micom
29	MDAT	I	Data input pin from micom
30	RESET	I	Reset input pin from micom, reset at "L"
31	LOCK		Pin for operation of the sled runaway prevention function at "L"
32	TRCNT	O	Track count output pin
33	ISTAT	O	Internal status output pin
34	AVEE (S)		Analog negative power supply input pin for SERVO part
35	APDI	I	Input pin of DSP phase comparison output (PHAS)
36	F8M	O	Output pin of analog VCO Normal speed = 8.64 MHz, Double speed = 17.28MHz
37	AASC	I	Auto-Asymmetry control input pin
38	EFMO	O	EFM comparator output pin
39	SLEN	I	Non-inverting input pin of SLED SERVO amplifier
40	SLEO	O	Output pin of SLED SERVO amplifier
41	SLEI	I	Inverting input pin of SLED SERVO amplifer
42	TEST2		Test input pin to change speed mode Normal speed = "H", Double speed = "L"
43	SPDI	I	Inverting input pin of spindle servo amplifier
44	SPDLO	O	Spindle servo amplifier output pin
45	FCE	I	Invering input pin of focus servo complifier.
46	FSE0	O	Output pin of focus sevoe amplifier
47	TKEI	I	Non-inverting input pin of tracking servo amplifier
48	TKE0	O	Output pin of tracking servo amplifier
49	N/C		No connection
50	ATS	I	Anti-shock input pin
51	TZC	I	Tracking Zero Crossing input

Pin No.	Symbol	I/O	Description
52	TE2	I	Tracking Error Servo input pin
53	TE1	O	Output pin of tracking Error Amplifer
54	TDFCT	I	Capacitor Connection pin for Defect Compensation of tracking servo
55	DVCC		Digital positive power supply input pin for servo part
56	FE2	I	Focus error servo input pin
57	FE1	O	Output pin of focus error Amplifier
58	FDFCT	I	Capacitor connection pin for defect compensation of focus servo
59	FOK	O	Output pin of Focus ok comparator.
60	LDON	I	Laser diode ON/OFF control pin
61	EI	I	Feedback input pin of E I-V amplifier
62	EO	O	Output pin of E I-V amplifier
63	FBIAS	I	Bias pin of non-inverting input of focus error amplifier
64	DVEE		Digital negative power supply input pin for servo part
65	RFI	I	Output Signal of RF summing amplifier is inputed through capacitor
66	RFO	O	Output pin of RF summing amplifier
67	RF-	I	Inverting input pin of RF summing amplifier
68	RV		Output pin of (AVCC + AVEE)/2 Voltage
69	CV		Bias input pin of Center Voltage Buffer
70	LD	O	Output pin of APC amplifier
71	PD	I	Input pin of APC amplifier
72	AVCC		Analog positive power supply input pin for RF part
73	N/C		No connection
74	PD2	I	Inverting input pin of RF I-V AMP2
75	PD1	I	Inverting input pin of RF I-V AMP1
76	F	I	Inverting input pin of F I-V AMP
77	E	I	Inverting input pin of E I-V AMP
78	P/N		Selecting P-sub/N-sub of Laser diode
79	DCC2		Defect bottom-hold output is inputed through capacitor
80	DCC1		Output pin of defect bottom-hold

● DSP (KS9282) (NIC 9282)

Pin No.	Symbol	I/O	Description
1	AVDD1		Aanlog Vcc 1
2	DPDO	O	Charge pump output for master PLL
3	DPFIN	I	Filter input for master PLL
4	DPFOUT	O	Filter output for master PLL
5	CNTVOL	I	VCO control voltage for master PLL
6	AVSS1		Analog Ground 1
7	DATX	O	Digital audio output
8	XIN	I	X-tal oscillator input
9	XOUT	O	X-tal oscillator output
10	WDCH	O	Word clock of 48 bit / SLOT (Normal speed = 88.2 KHz, Double speed = 176.4KHz)
11	LRCH	O	Channel clock of 48 bit / SLOT (Normal speed = 44.1KHz, Double = 88.2KHz)
12	ADATA	O	Serial audio data output of 48 bit / SLOT (MSB first)
13	DVSS 1		Digital Ground 1
14	BCK	O	Audio data Bit clock for 48 bit / SLOT (Normal speed = 2.1168KHz, Double speed = 4.2336(KHz)
15	C2PO	O	C2 pinter for output audio data
16	VREFL2	I	Input terminal 2 of reference voltage "L" (Floating)
17	VREFL1	I	Input terminal 1 of reference voltage "L" (GND Connection)
18	AVDD2		Analog VCC2
19	RCHOUT	O	Right-Channel audio output through D/A Converter
20	LCHOUT	O	Left-channel audio output through D/A converter
21	AVSS2		Analog Ground 2
22	VREFH 1	I	Input terminal 1 of reference voltage "H" (V_{DD} connection)
23	VREFH 2	I	Input terminal 2 of reference voltage "H" (Floating)
24	EMPH	O	Emphasis / Non - Emphasis Output ("H":Emphasis)
25	LKFS	O	The Lock Status output of frame sync\
26	SOS 1	O	Output of subcode sync signal (S 0 + S 1)
27	RESET	I	System reset at "L"
28	SQEN	I	SQCK I/O Control ("L" : internal CK, "H" : external CK)
29	SQCK	I/O	Clock for output Subcode-Q data
30	SQDT	O	Serial output of Subcode-Q data
31	SQOK	O	The CRC check result signal output of subcode-Q
32	SBCK	I	CLOCK for output subcode-Q data
33	SDAT	O	Subcode serial data output
34	DV_{DD} 1		Digital Vcc 1
35	MUTE	I	Mute control Input ("H" : Mute ON)
36	MLT	I	Latch Signal Input from Micom
37	MDAT	I	Serial data Input from Micom
38	MCK	I	Serial Clock input from Micom
39	DB 8	I/O	SRAM data I/O Port 8 (MSB)
40	DB 7	I/O	SRAM data I/O Port 7
41	DB 6	I/O	SRAM data I/O Port 6

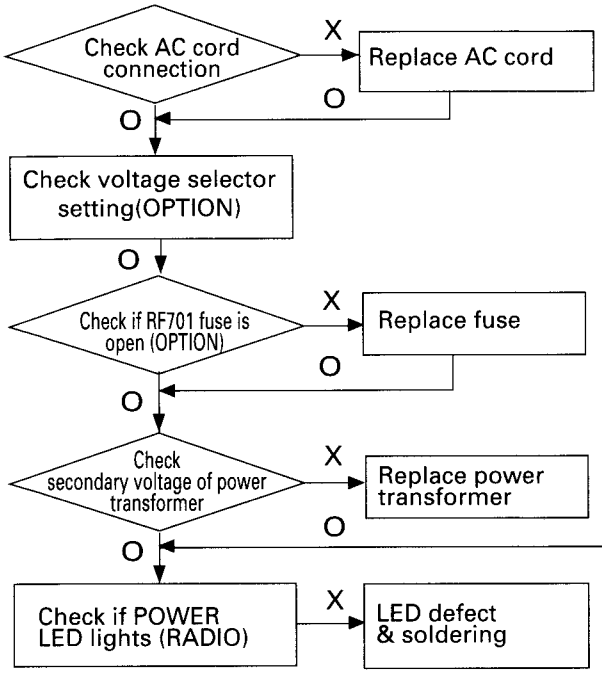
Pin No.	Symbol	I/O	Description
42	DB 5	I/O	SRAM data I/OPort 5
43	DB 4	I/O	SRAM data I/OPort 4
44	DB 3	I/O	SRAM data I/OPort 3
45	DB 2	I/O	SRAM data I/OPort 2
46	DB 1	I/O	SRAM data I/OPort 1
47	C1F1	I/O	Monitoring output for C1 error correction (RA 1)
48	C1F2	I/O	Monitoring output for C1 error correction (RA 2)
49	C2F1	I/O	Monitoring output for C2 error correction (RA 3)
50	C2F2	I/O	Monitoring output for C2 error correction (RA 4)
51	C2FL	I/O	C2 decoder flag (High : When the processing C2 code is impossible correction state) (RA5)
52	/PBCK	I/O	Output of VCO/2 (Normal speed = 4.3218MHz, Double speed = 8.6436MHZ) (RA
53	DV_{SS2}		Digital Ground 2
54	FSDW	I/O	Unprotected frame sync (RA7)
55	ULKFS	I/O	Frame sync protection state (RA8)
56	/JIT	I/O	Display of either RAM overflow or underflow for ± 4 frame jitter margin (RA9)
57	C4M	I/O	Only monitoring signal (Normal playback : 4.2336MHz) (RA10)
58	C16M	I/O	16.9344MHz signal output (RA11)
59	/WE	I/O	Terminal for test
60	/CS	I/O	Terminal for test
61	SEL 1	I	Mode Selection Terminal 1 (H : 33.8688MHz, L : 16.9344MHz)
62	SEL 2	I	Mode Selection Terminal 2 (H : APLL : DPLL)
63	SEL 3	I	Mode Selection Terminal 3 (H : CDROM L : CDP)
64	SEL 4	I	Mode Selection Terminal 4 (L : Internal SRAM)
65	TEST	I	Test Terminal (L = Normal operating state)
66	EFMI	I	EFM Signal input
67	APDO	O	Charge Pump output for analog PLL
68	/ISTAT	O	The internal status output
69	TRCNT	I	Tracking counter input signal
70	LOCK	O	Output signal of LKFS Condition sampled PBFR/16 (If LKFS is "H", Lock is "H". (If the LKFS is sampled "L" at least 8 times by PBFR/16, Lock is "L")
71	PBFR	O	Write frame clock (Lock : 7.35KHz)
72	SMEF	O	LPF time constant control of the spindle servo error signal
73	SMON	O	ON/OFF control signal for spindle servo
74	DV_{DD2}		Digital V_{CC} 2
75	SMPD	O	Spindle Motor drive (Rough control in the CLV-S mode Phase control in the CLV-P mode)
76	SMSD	O	Spindle Motor drive (Velocity control in the CLV-P mode)
77	VCO_{O1}	O	Vco output signal (When the state is lock by means of PBFR, it is 8.643MHz)
78	VCO_{I1}	I	VCO input signal
79	DSPEED	I	Double speed mode control (H : Normal Speed, L : Double Speed)
80	APD02	O	Analog PLLCharge Pump output for Double Speed mode

6.Troubleshooting

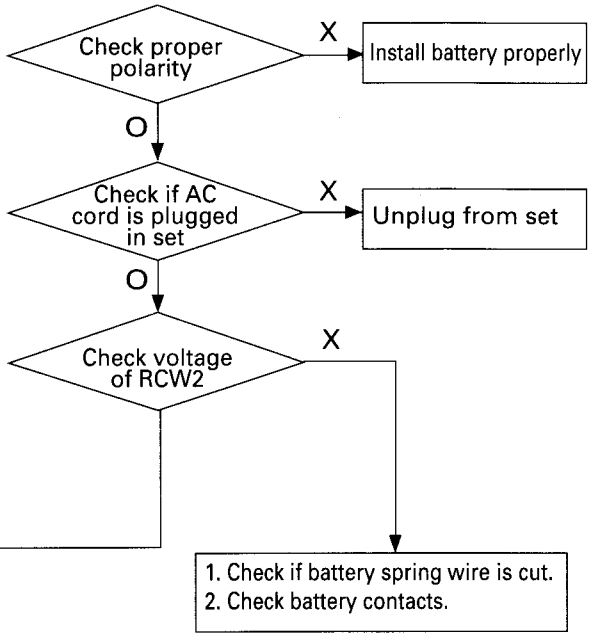
6-1. Radio cassette section

* O : YES. NORMAL. OK
X : NO. ABNORMAL

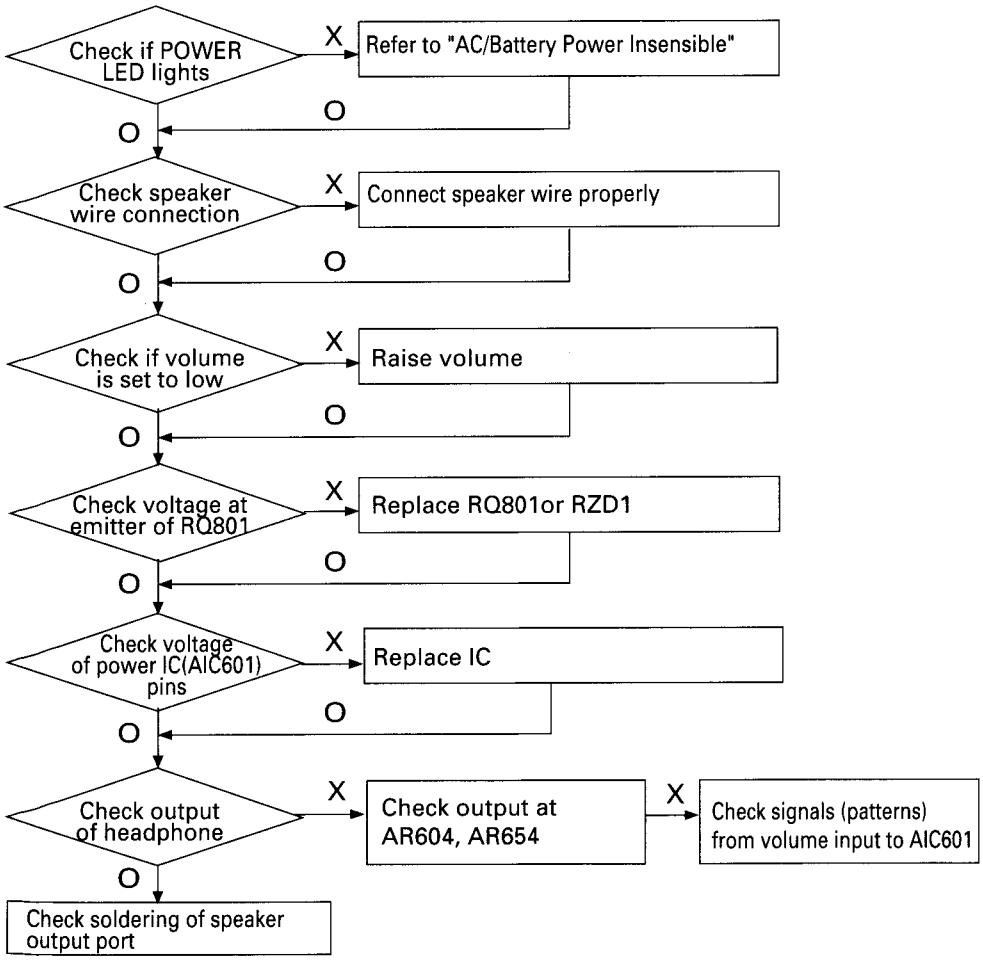
6-1-1. AC power insensible



6-1-2. Battery power insensible

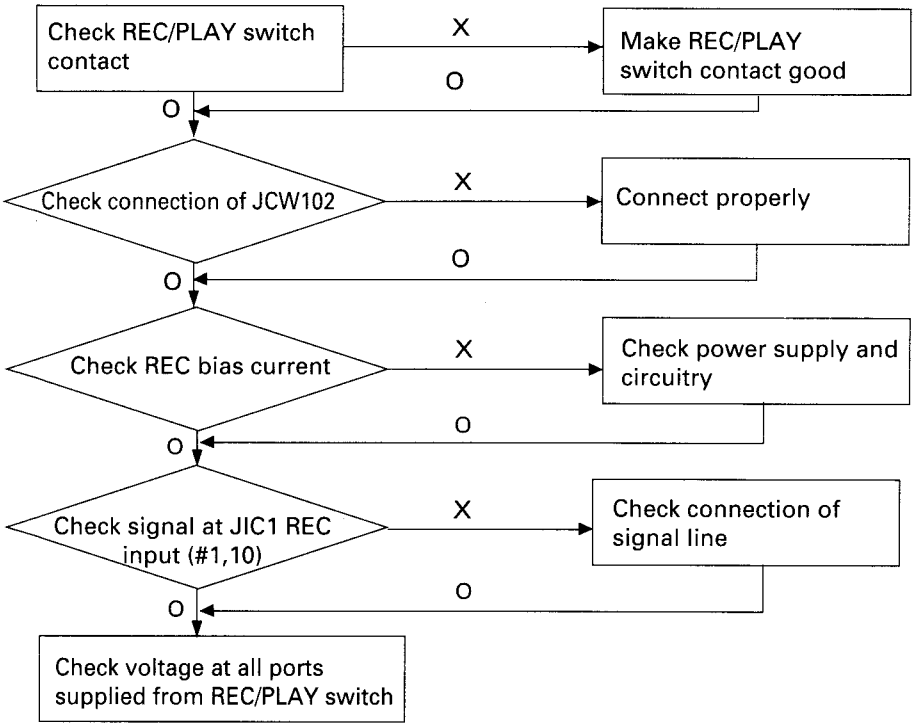

Check proper polarity
Install battery properly
Check if AC cord is plugged in set
Unplug from set
Check voltage of RCW2
1. Check if battery spring wire is cut.
2. Check battery contacts.

6-1-3.Output insensible

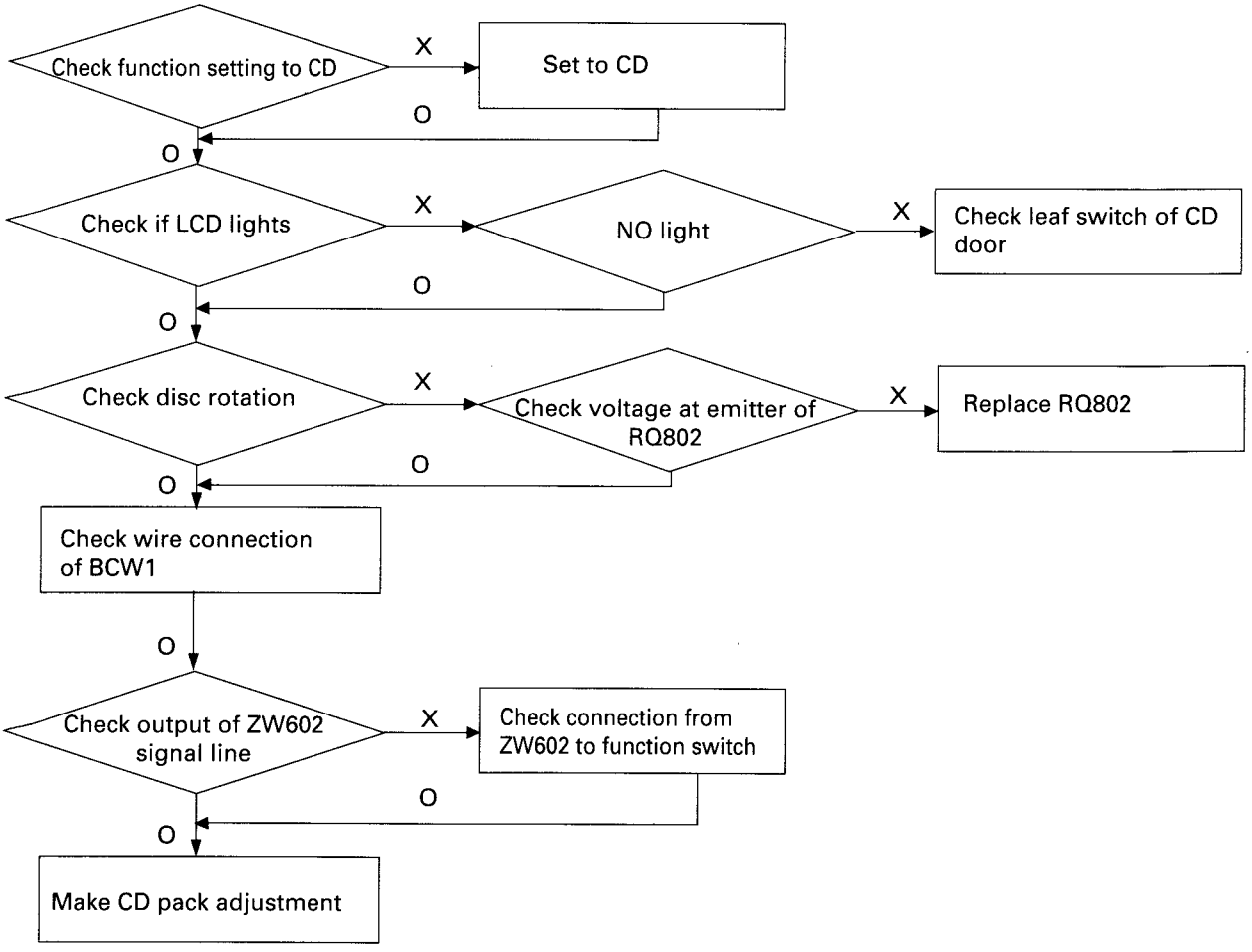

Check if POWER LED lights
Refer to "AC/Battery Power Insensible"
Check speaker wire connection
Connect speaker wire properly
Check if volume is set to low
Raise volume
Check voltage at emitter of RQ801
Replace RQ801or RZD1
Check voltage of power IC(AIC601) pins
Replace IC
Check output of headphone
Check output at AR604, AR654
Check signals (patterns) from volume input to AIC601
Check soldering of speaker output port

6-1-4. Record not working

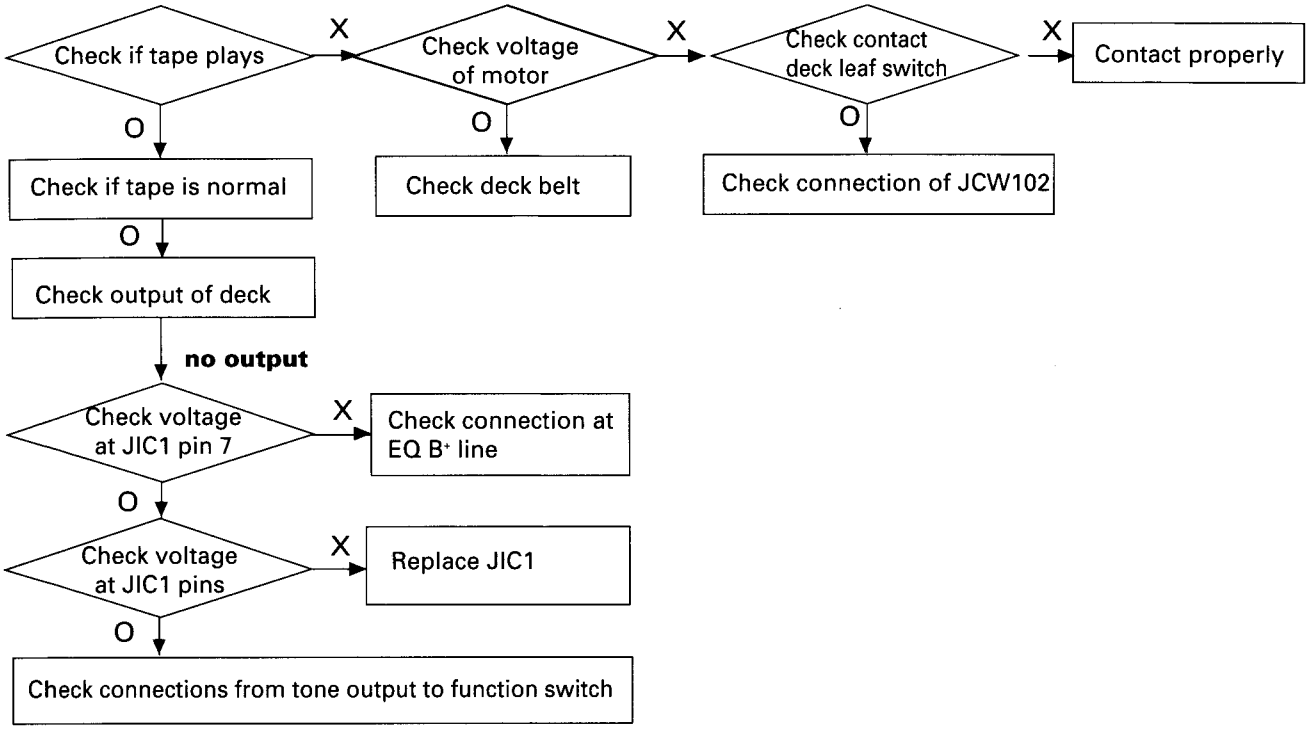
* O : YES. NORMAL. OK
  X : NO. ABNORMAL



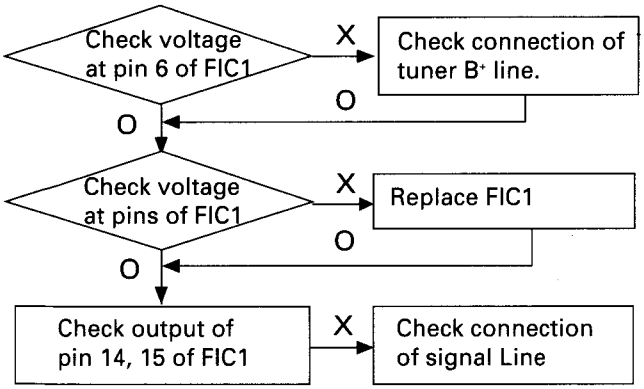
6-1-5. Compact disc inoperative

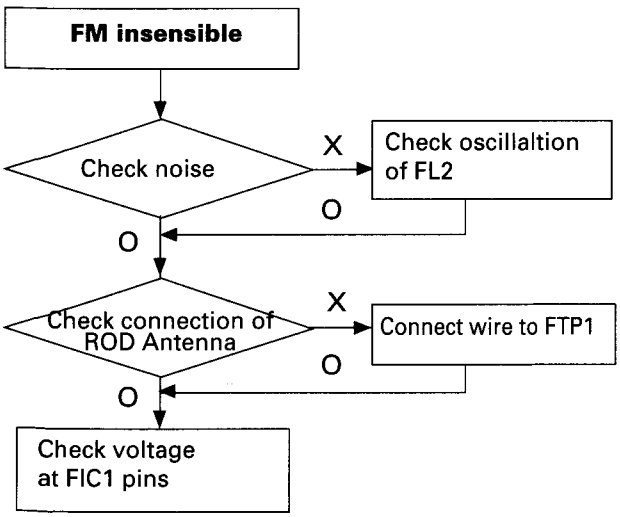


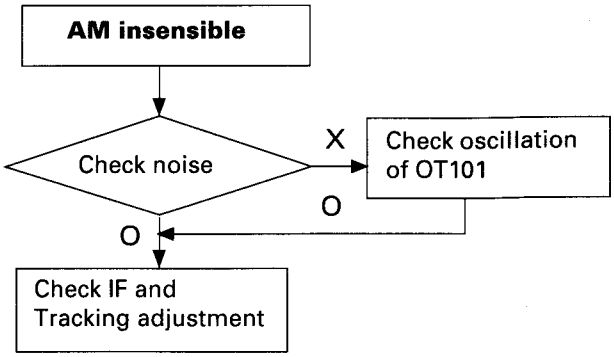
6-1-6. Tape not working



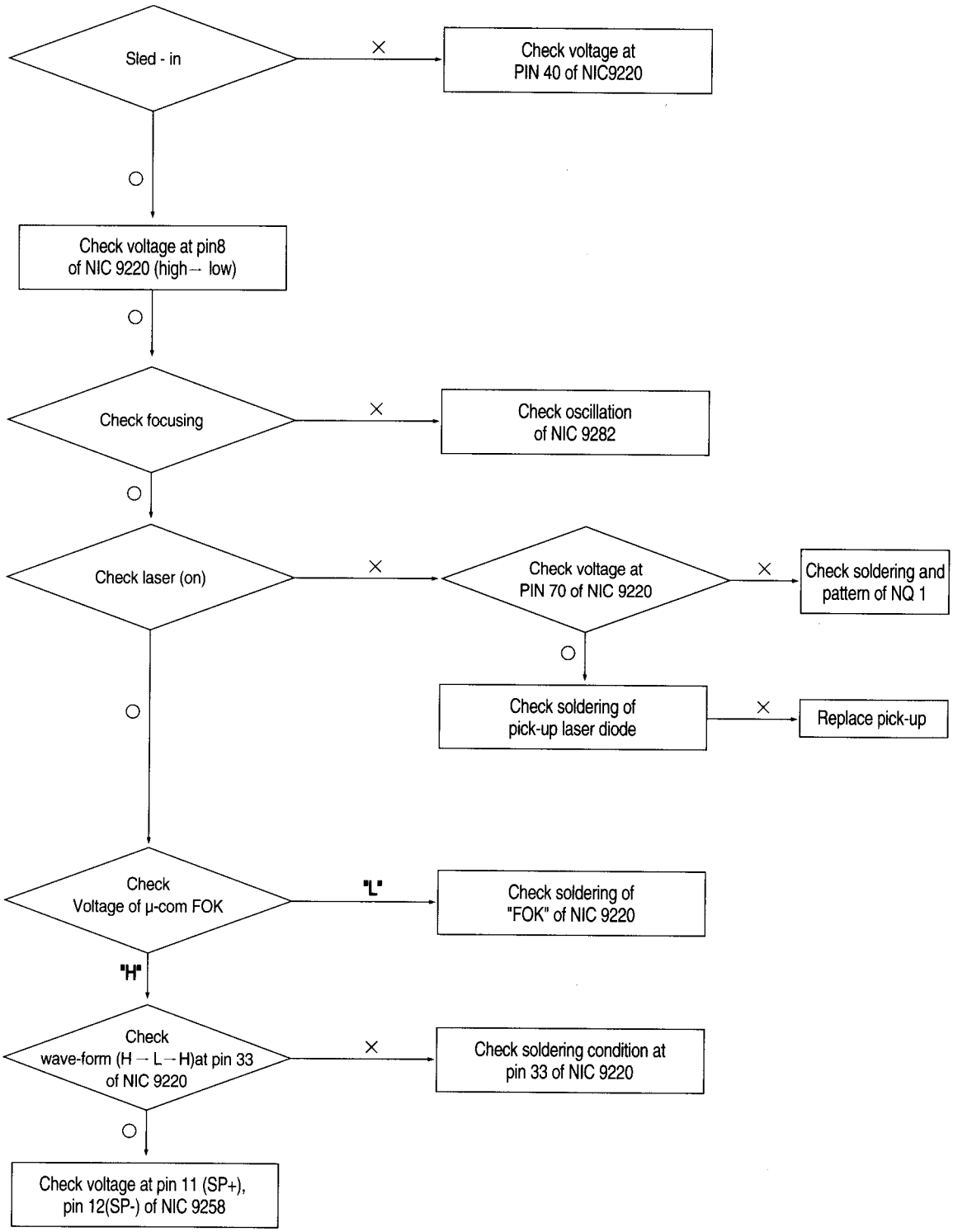
6-1-7. Radio insensible



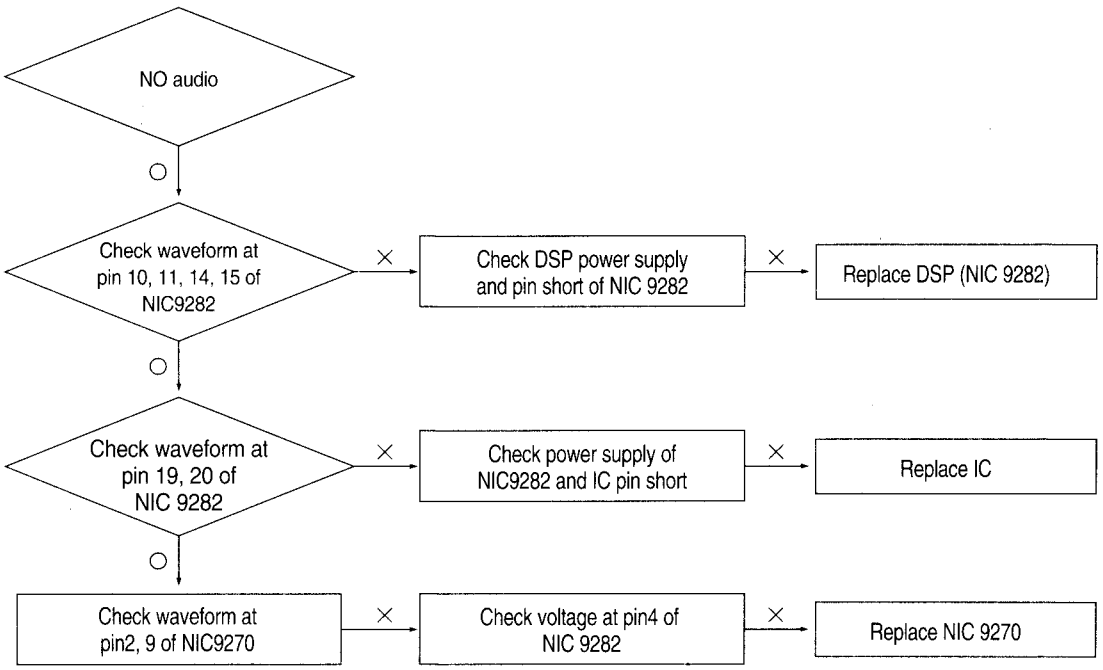




6-2. CD section
6-2-1. No disc error



6-2-2. No audio


NO audio
Check waveform at pin 10, 11, 14, 15 of NIC9282
Check DSP power supply and pin short of NIC 9282
Replace DSP (NIC 9282)
Check waveform at pin 19, 20 of NIC 9282
Check power supply of NIC9282 and IC pin short
Replace IC
Check waveform at pin2, 9 of NIC9270
Check voltage at pin4 of NIC 9282
Replace NIC 9270

7. Adjustment

7-1. Radio cassette section

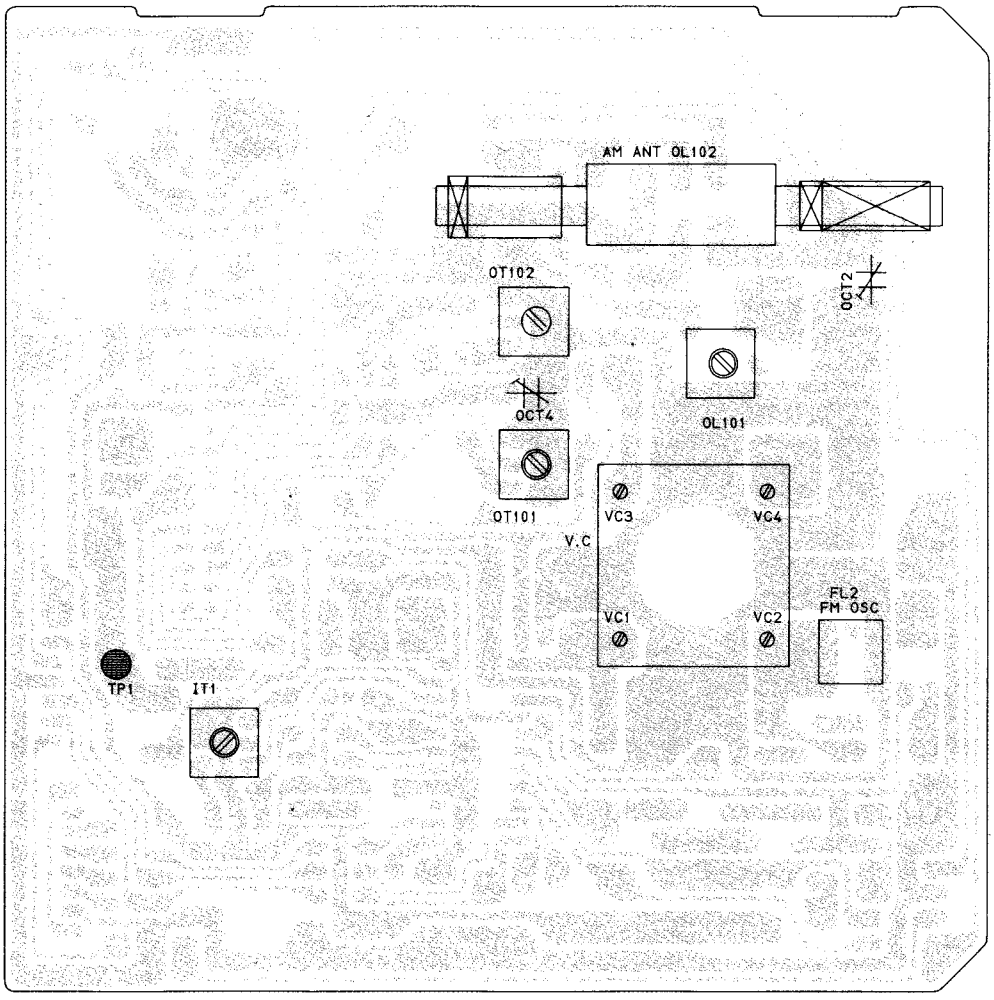
7-1-1. Measuring instruments required

(1) AM Standard Signal Generator (S.S.G)
: 100KHz ~ 35MHz, 400Hz, 30% MOD.
(2) FM Standard Signal Generator (S.S.G)
: Output impedance 75Ω, 400Hz, 22.5KHz DEV.
(3) IF Generator
FM: 10.7MHz
AM(MW)/LW/SW : 455 or 465KHz
(4) Oscilloscope
(5) VTVM
(6) Frequency counter
(7) Loop antenna
(8) Dummy load (4Ω)

7-1-2. Importants

(1) Check the power source voltage.
(2) Select desired Band and Function.
(3) Set Tone Control at mid position.
(4) Modulate AM to 30% amplitude with 400Hz signal.
and FM to 22.5KHz deviation with 400Hz signal.
(5) Set Volume Control to approximately 50mW, 4Ω.

• Location of adjustment point (Tuner PCB)



7-1-3. FM adjustment

ITEM	CONNECTION	STEP	S.S.G Frequency	RADIO DIAL SETTING	Adjustment Point	RESULT
Frequency coverage	Fig. 2	1	87.3MHz	Tune to the Lowest frequency	FL2 FM OSC coil	Best resonating point of SSG.
		2	108.3MHz	Tune to the highest frequency	VC2 OSC trimmer(VARICON)	Best resonating point of SSG.
		3	Repeat steps 1 and 2 several times.			
Tracking	Fig. 2	4	90MHz	90MHz	Not required	
		5	106MHz	106MHz	VCT1 ANT trimmer (VARICON)	Maximum Output
		6	Repeat steps 4 and 5 to obtain suitable sensitivity at 90MHz and 106 MHz.			

FM OUTPUT : FIC1 (KA2293) PIN NO. 13, 14

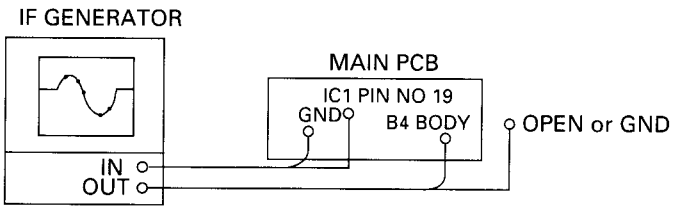


Fig. 1

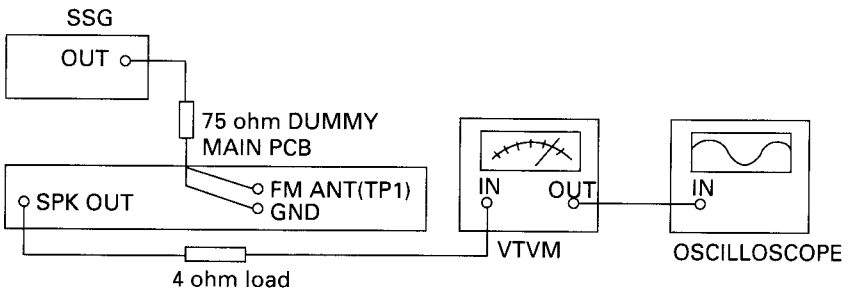


Fig. 2

7-1-2. 2Band(FM/AM) adjustment

ITEM	CONNECTION	STEP	S.S.G Frequency	RADIO DIAL SETTING	Adjustment Point	RESULT
IF	Connect FM/AM IF generator to loop ANT Couple the AM ANT coil close to loop ANT and take out the signal from AM IF out point (FIC1 pin No 19) (See Fig. 3)	1	455KHz (465KHz)	Lowest frequency	AM IFT IT1 (WHT)	Maximum output and best "V" curve
		2	Repeat 1 until no futher improvement can be made.			
AM coverage	Fig. 4	3	515KHz	Lowest frequency	AM OSC coil (RED) OT101	Best resonating point of SSG
		4	1650KHz	highest frequency	AM OSC trimmer VC4(VARICON)	Best resonating point of SSG
		5	Repeat steps 3 and 4 several times			
AM tracking	Fig. 4	6	600KHz	600KHz	AM ANT coil OL101	Maximum output
		7	1400KHz	1400KHz	AM trimmer (VC3)(VARICON)	Maximum output
		8	Repeat steps 6 and 7 to obtain suitable sensitivity at 600KHz and 1400KHz.			

AM IF OUTPUT : FIC1(KA2293) PIN NO. 19.

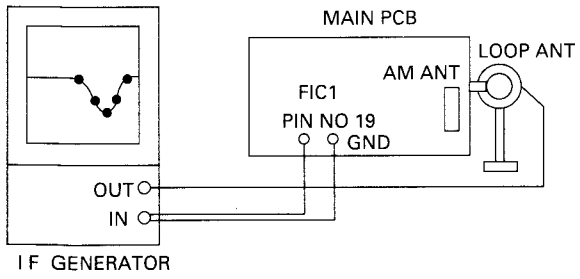


FIG. 3

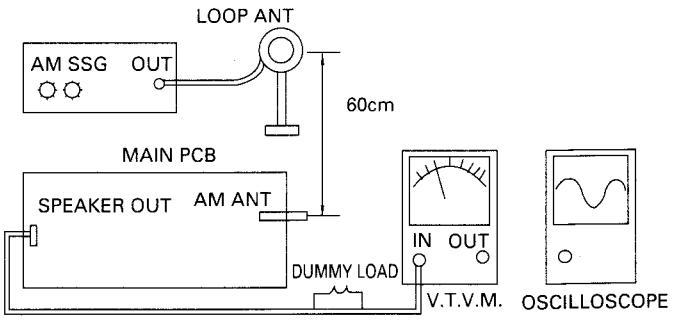


FIG . 4

7-1-3. 3 BAND (FM/SW/AM) AM/SW adjustment

ITEM	CONNECTION	STEP	S.S.G. Frequency	RADIO DIAL SETTING	Adjustment point	REMARK
IF	IF is the same as 2 band's					
AM coverage	Fig.4.	1	515KHz	Lowest frequency	AM OSC coil (RED) OT101	Best resonating point of SSG
		2	1650KHz	highest frequency	AM OSC trimmer OCT4	Best resonating point of SSG.
		3	Repeat steps 1 and 2 several times			
AM tracking	Fig4	4	600KHz	600KHz	AM ANT COIL OL 102	Maximum output
		5	1400KHz	1400KHz	AM ANT trimmer VC3 (VARICON)	Maximum output
		6	Repeat steps 4 and 5 to obtain suitable sensitivity at 600KHz and 1400KHz			
SW frequency coverage	Connect AM(SW) signal generator to SW ANT terminal (FTP1)thru SW dummy ANT and speaker output to VTVM across 4 ohm load. (see Fig.5 Fig.6)	7	5.7MHz	Lowest frequency	SW OSC COIL (GRN) OT102	Best resonating point of SSG
		8	18.5MHz	highest frequency	SW OSC trimmer VC4 (VARICON)	Best resonating point of SSG
		9	Repeat steps 7 and 8 several times			
SW tracking	Fig.5, Fig.6	10	7MHz	7MHz	SW ANT coil OL 101	Maximum output
		11	15MHz	15MHz	NO ADJUSTMENTS	
		12	Repeat steps 10 and 11 to obtain suitable sensitivity at 7MHz and 15MHz			

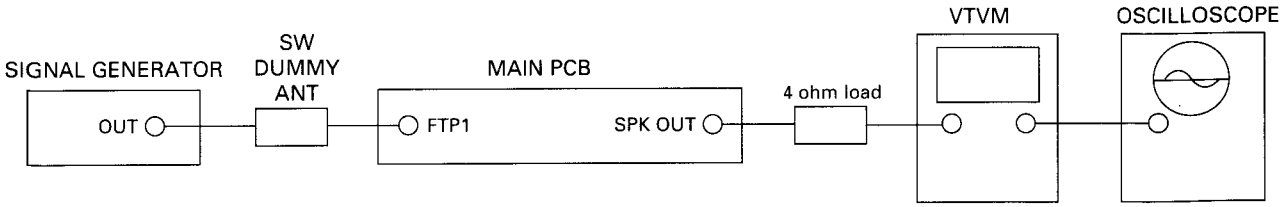


FIG.5 SW frequency coverage, tracking adjustment

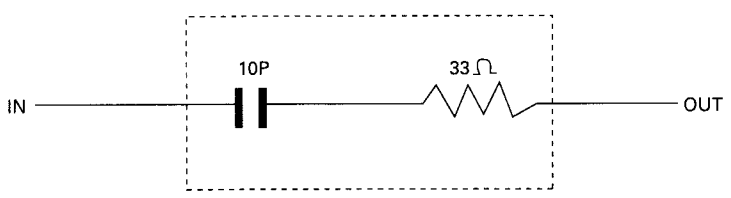


FIG.6 SW dummy ANT

7-1-4. 3 Band (FM/MW/LW) MW(AM)/LW adjustment

ITEM	CONNECTION	STEP	S.S.G. Frequency	RADIO DIAL SETTING	Adjustment point	REMARK
IF	IF is the same as 2 band's					
MW(AM) frequency coverage	Fig.4.	1	515KHz	lowest frequency	MW OSC coil OT 102 (RED)	Best resonating point of SSG
		2	1650KHz	highest frequency	MW OSC trimmer VC4 (VARICON)	Best resonating point of SSG.
		3	Repeat steps 1 and 2 several times.			
MW(AM) tracking	Same as 2 band's (see Fig.4)	4	600KHz	600KHz	AM ANT coil OL 102	Maximum output
		5	1400KHz	1400KHz	MW ANT trimmer VC3 (VARICON)	Maximum output
		6	Repeat steps 4 and 5 to obtain suitable sensitivity at 600KHz and 1400KHz.			
LW frequency coverage	Fig.4	7	145KHz	lowest frequency	LW OSC coil (BRN) OT101	Best resonatintg point of SSG
		8	295KHz	highest frequency	LW OSC trimmer OCT4	BEST resonating point of SSG
		9	Repeat steps 7 and 8 several times.			
LW tracking	Fig.4	10	170KHz	170KHz	LW ANT coil OL 102	Maximum output
		11	250KHz	250KHz	LW ANT trimmer OCT2	Maximum output
		12	Repeat steps 10 and 11 to obtain suitable sensitivity at 170KHz and 250KHz.			

7-2. Tape section

1) Recording BIAS adjustment

① Connect frequency counter to JC502 (See Fig.7)and press the Record button.

② Adjust JT501 (BIAS OSC COIL) until frequency counter reads 50KHz on stereo FM mode .("0 " position)

2) Tape AZIMUTH adjustment

① Connect the equipments as per Fig.8 to adjust the tape azimuth with test tape (recorded at 6.3KHzMTT-113N)

② Play the test after inserting in DECK1.

③ Adjust the azimuth ajustment screw of left side of record/play head for maximum output and for the same channel phase. (see Fig.9)

3) Tape speed adjustment

① Connect the equipments as shown in Fig.8 adjust the tape speed with test tape (recorded at 3KHz : MTT-111N)

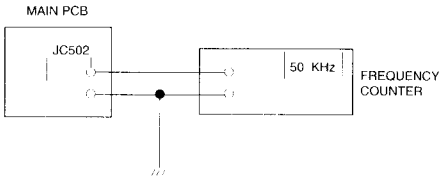


Fig.7 Recording bias adjustment

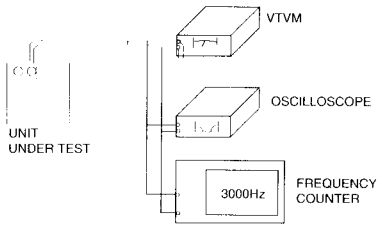


Fig.8 Azimuth speed adjustment

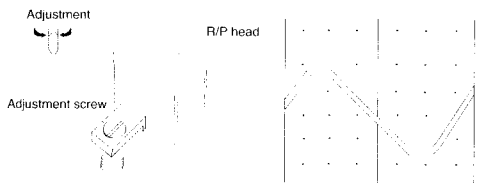
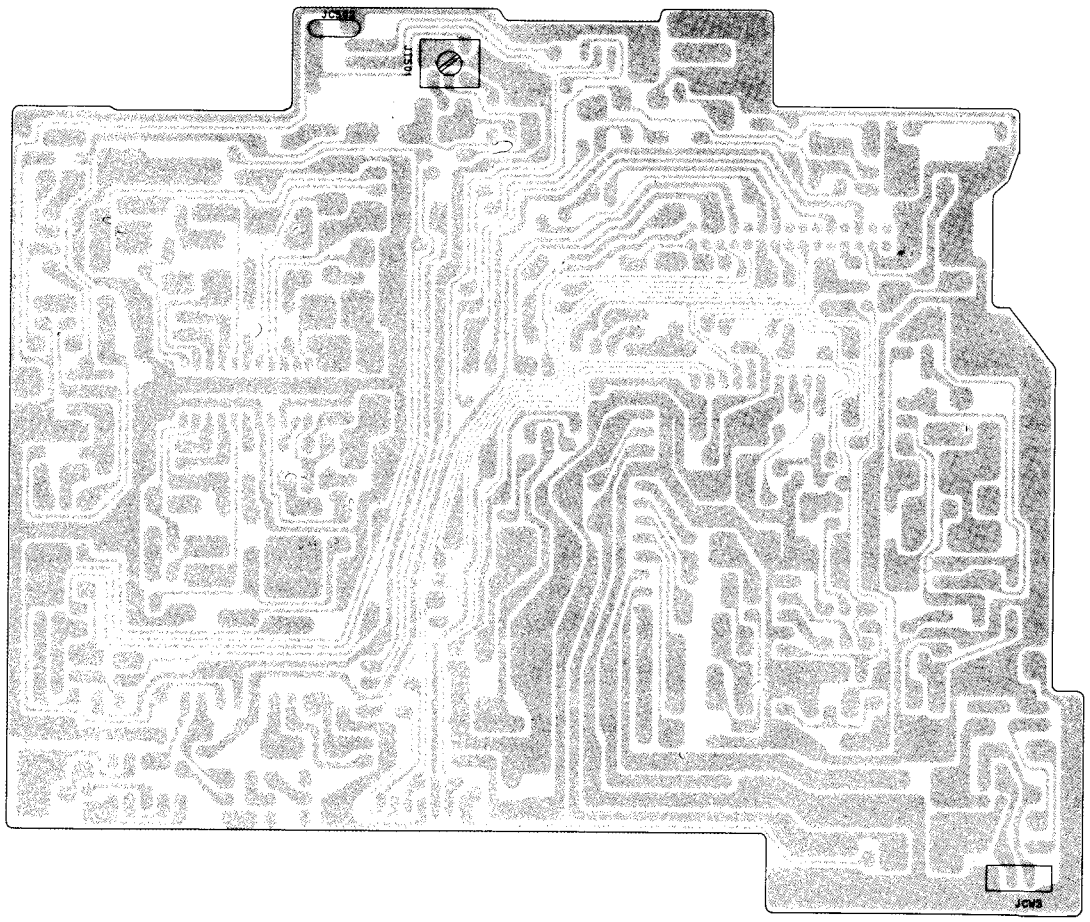


Fig.9 Azimuth speed adjustment



7-3. CD section

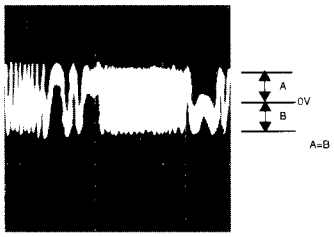
7-3-1. Focus bias adjustment

(1) Turn power on without loading a disc.
(2) Set oscilloscope voltage/DIV to DC 20mV.
(3) Vref to GND and TP 2 (FE) to positive terminal on the oscilloscope.
(4) Adjust NVR1701 so that the voltage is 0mV DC on the oscilloscope.

7-3-2. E. F balance adjustment

(1) Turn power on.
(2) Set oscilloscope TIME/DIV to 2mS.
(3) Set oscilloscope voltage/DIV to 0.5V.
(4) Vref to GND and TP2 to positive terminal on the oscilloscope.
(5) Press PLAY with loading a disc.
(6) Adjust NVR1704 all the way counterclockwise (Intermittent sound).
(7) Adjust NVR1702 so that the wave-form is equally symmetrical (in reference to GND).
(8) Adjust NVR1704 so that sound comes out normally (Nearly mid-position of NVR1704).

NVR 1701



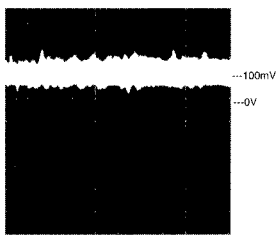
VOLT/DIV : 0.5 V
TIME/DIV : 2mS

NVR 1702

7-3-3. Focus gain adjustment

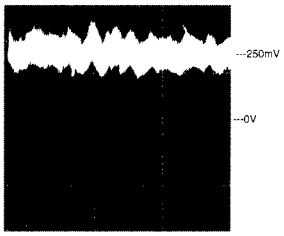
(1) Turn power on.
(2) Vref to GND and TP1 (FE) to positive terminal on the oscilloscope.
(3) Press PLAY after loading a disc.
(4) Adjust NVR1703 so that the wave-form is as shown in the figure.

(Normal waveform)



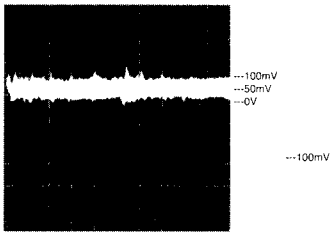
VOLT/DIV : 0.1 V
TIME/DIV : 2mS

(Low focus gain)



VOLT/DIV : 0.1 V
TIME/DIV : 2mS

(High focus gain)



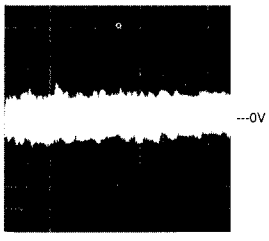
VOLT/DIV : 0.1 V
TIME/DIV : 2mS

NVR 1703

7-3-4. Traking gain adjustment

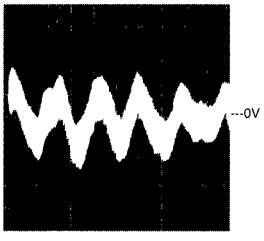
(1) Turn power on.
(2) Vref to GND and TP2 (TE) to positive terminal on the oscilloscope.
(3) Press PLAY after loading a disc.
(4) Adjust NVR1704 so that the wave-form is as shown in the figure.

(Normal wave-form)



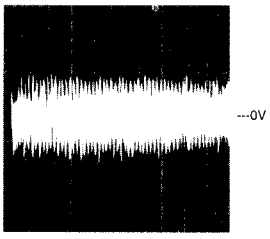
VOLT/DIV : 0.1 V
TIME/DIV : 2mS

(Low focus gain)



VOLT/DIV : 0.1 V
TIME/DIV : 2mS

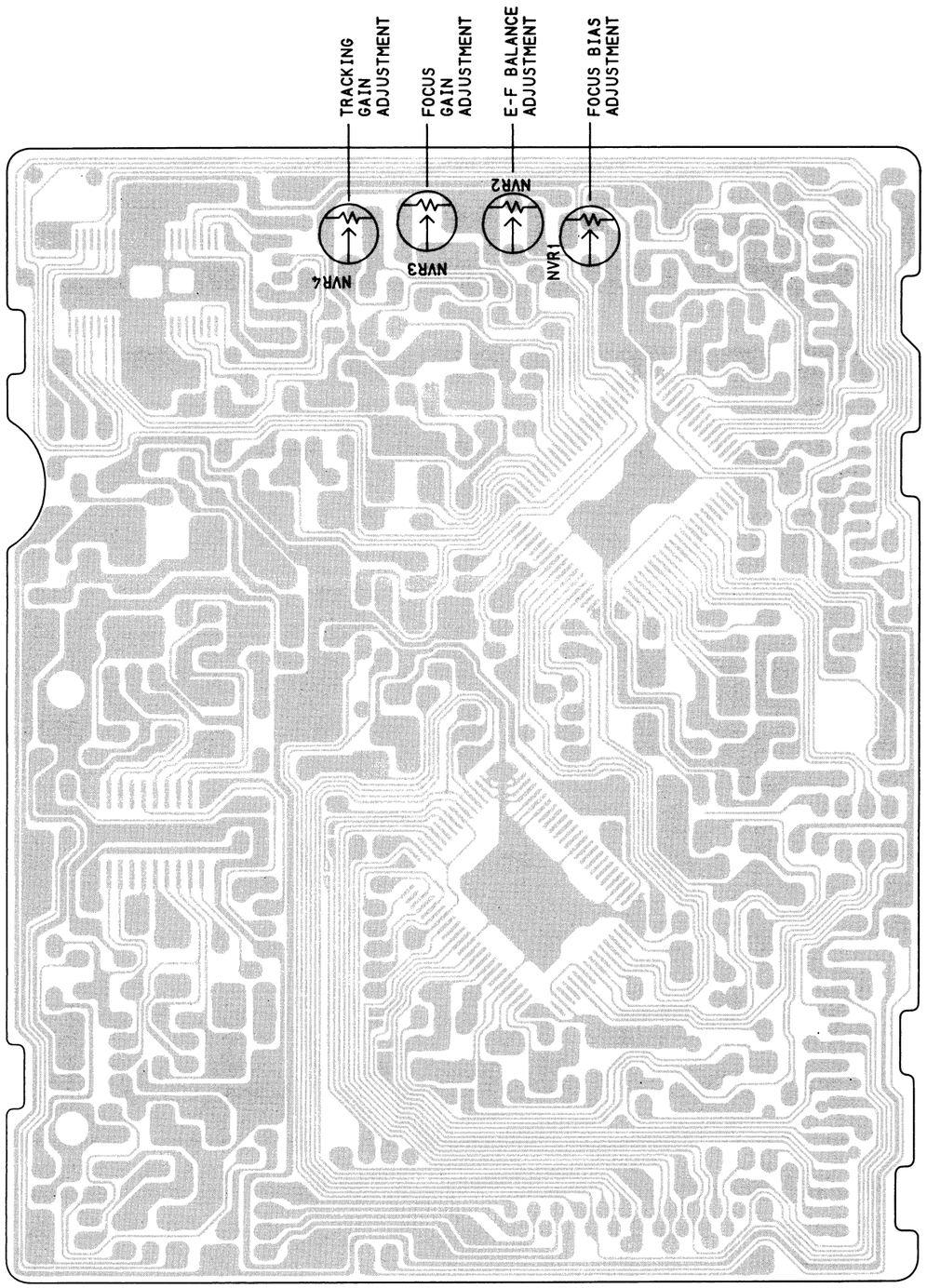
(High focus gain)



VOLT/DIV : 0.1 V
TIME/DIV : 2mS

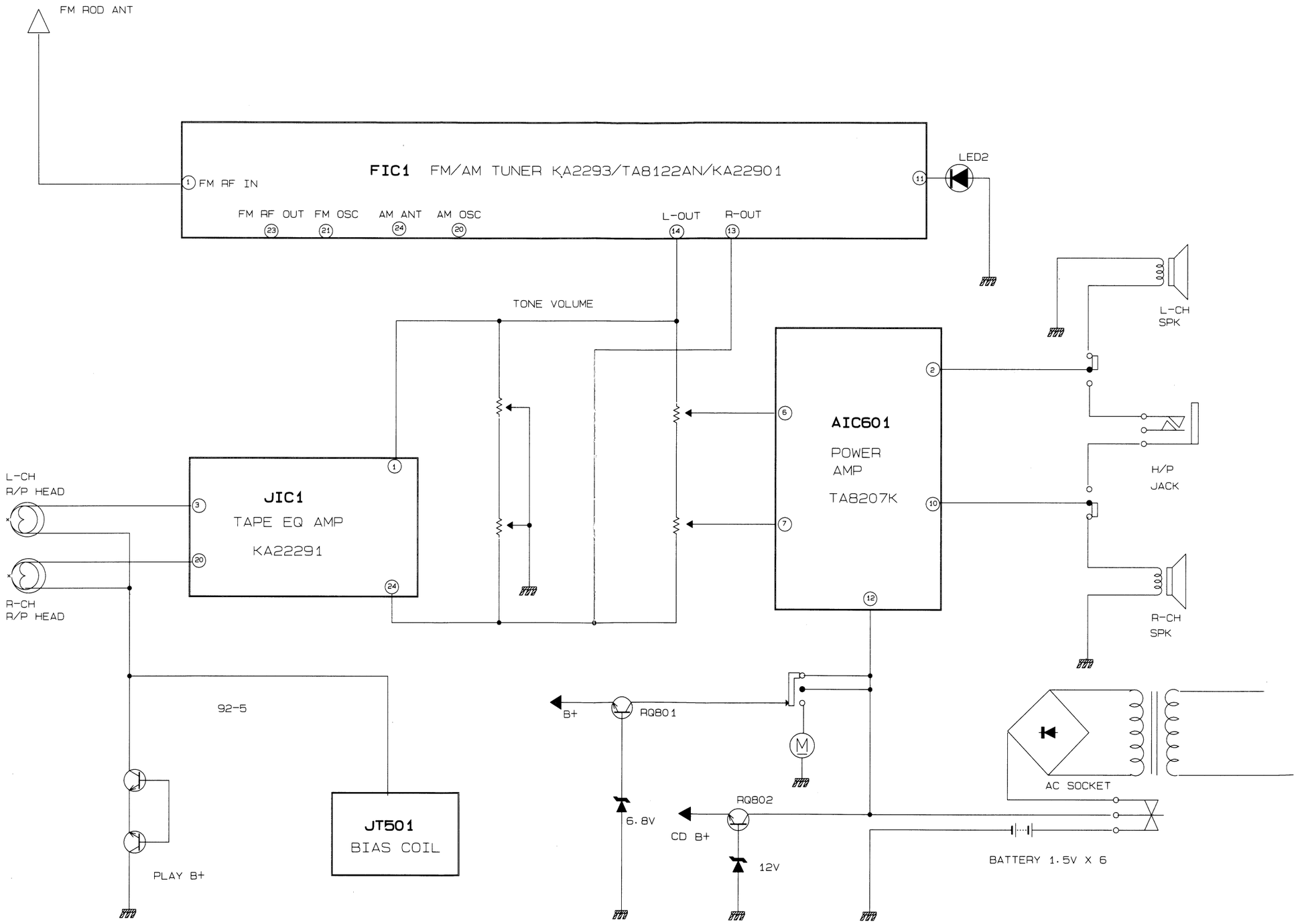
NVR 1704

7-3-5. Location of adjustment points (parts side)

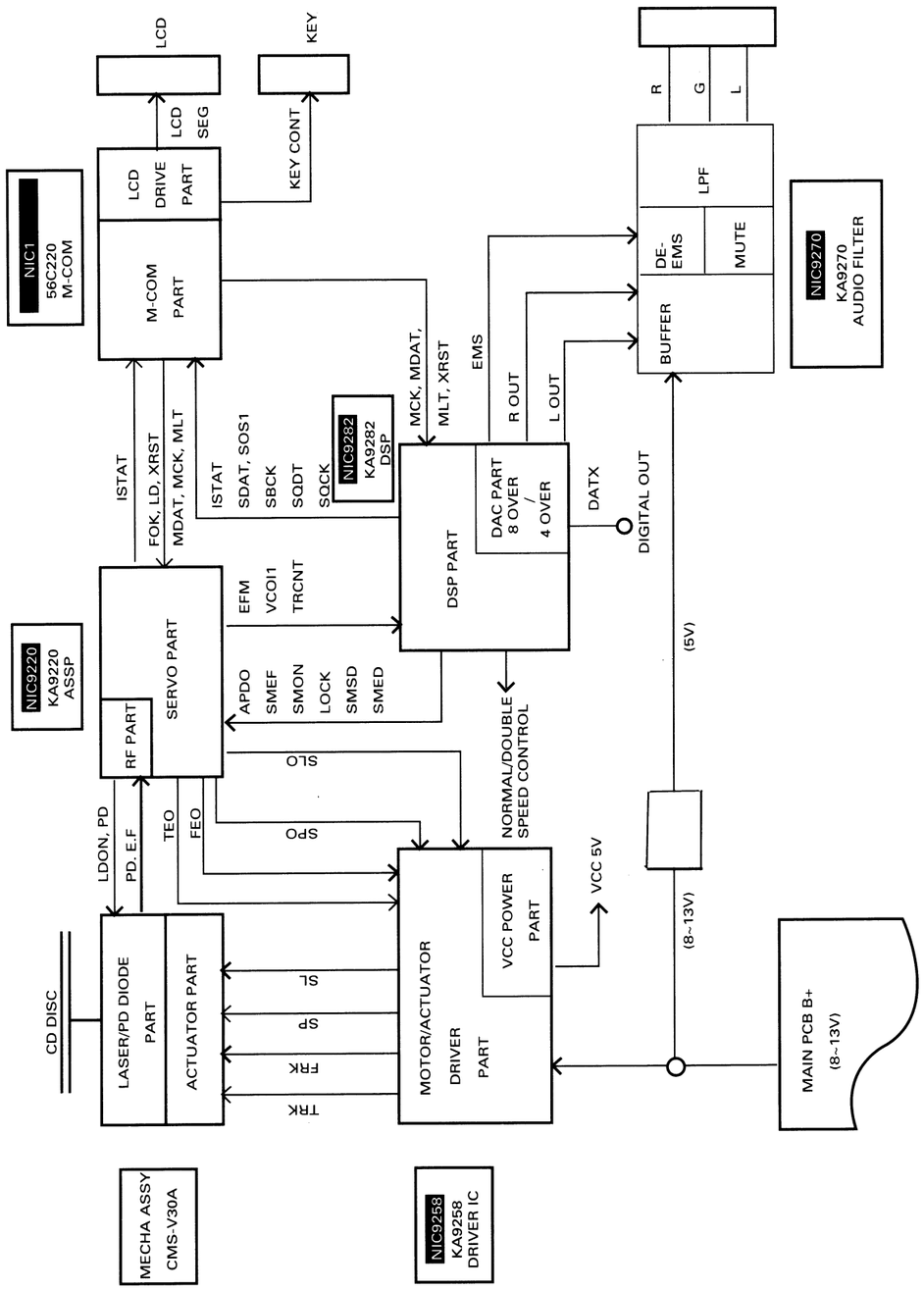


8. Block diagram

8-1. Main section



8-2. CD section



9. Exploded view & parts list

9-1. Main section

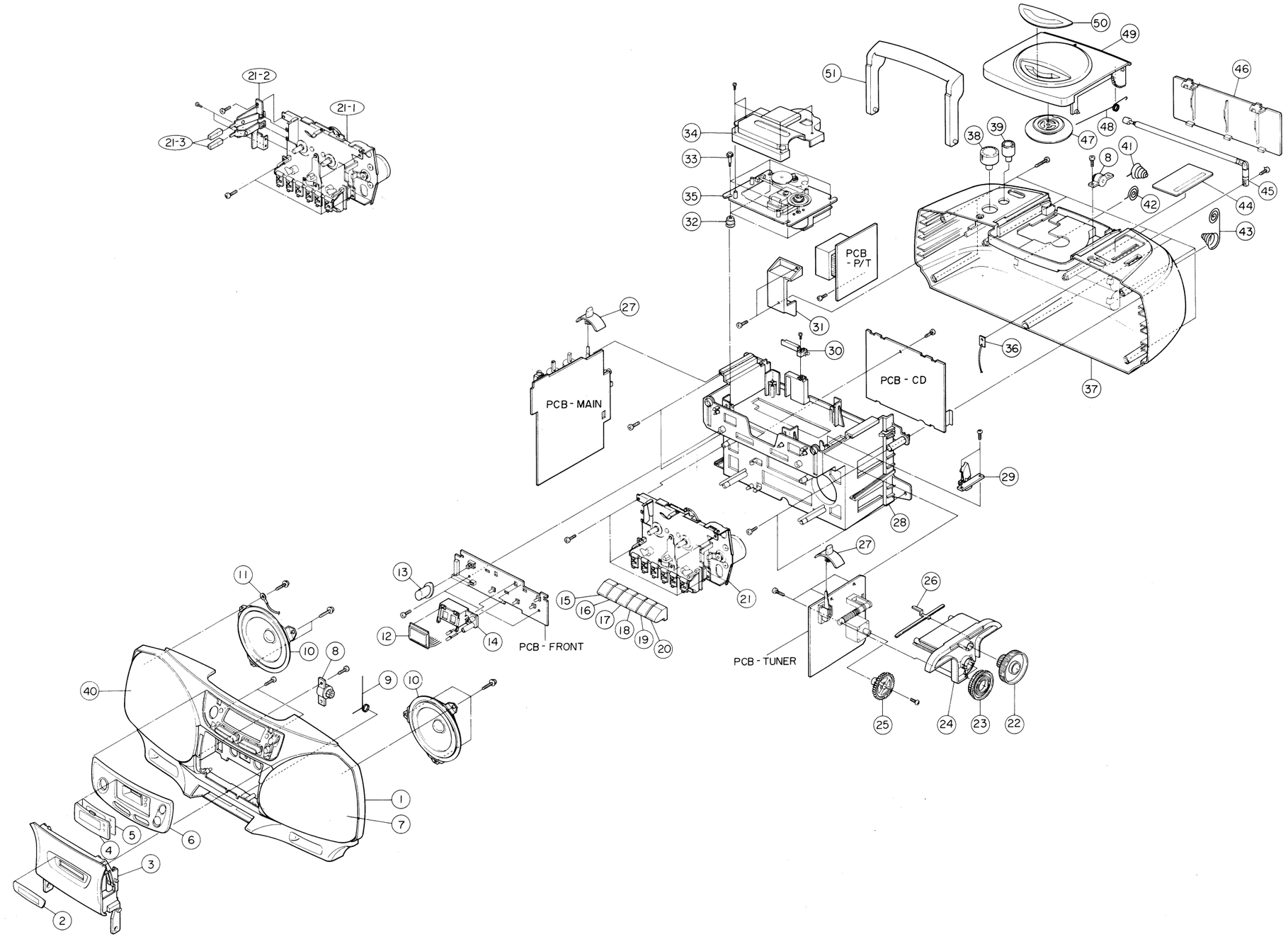
9-1-1. Parts list

● Exclutive part

No.	Code no.	Description & Specification	Q'ty	Remarks
1	12000-0272-00	CABINET FRONT ; MIPS DEEP BLUE	1	
2	14074-0256-00	WINDOW CASSETTE ; PC T0.5	1	
3	14041-0135-00	DOOR CASSETTE ; ABS DEEP BLUE	1	
4	14074-0254-00	WINDOW LCD ; ACRYL CLEAR	1	
5	14504-0327-00	STICKER LCD ; ACRYL CLEAR	1	
6	13312-0138-00	COVER FRONT ; RCD-750 D/BLU ABS	1	
7	14002-0042-00	GRILLE SPK.R ; SPC T0.6	1	
8	15214-506-013	DAMPER ASSY ; RCD1650 POM BLK	2	
9	12724-0202-00	SPRING CASSETTE ; SUS PI0.9	1	
10	A1300-0055	SPK-GENERAL ; 5W 40HM 127MM	2	
11	16634-515-110	CLAMPER WIRE ; DALB-2	1	
12	A4155-0075	LCD ; LE-0216A	1	
13	14084-0695-00	KNOB SBS ; ABS DEEP BLUE	1	
14	13323-0201-00	HOLDER LCD ; ABS BLACK	1	
15	14084-0694-01	KNOB DECK ; ABS DEEP BLUE(REC)	1	
16	14084-0694-02	KNOB DECK ; ABS DEEP BLUE(PLAY)	1	
17	14084-0694-03	KNOB DECK ; ABS DEEP BLUE(REW)	1	
18	14084-0694-04	KNOB DECK ; ABS DEEP BLUE(F.FWD)	1	
19	14084-0694-05	KNOB DECK ; ABS DEEP BLUE(STOP/EJECT)	1	
20	14084-0694-06	KNOB DECK ; ABS DEEP BLUE(PAUSE)	1	
21	17159-0085-00	DECK CASSETTE ; ADR2015FR/ADR2015RU	1	
21-1	17159-0079-00	DECK CASSETTE ; ADR1706FR/ADR1706FRU	1	
21-2	13019-0163-00	BRKT REVERSE ASSY ; ASS'Y	1	
21-3	14084-0640-00	KNOB REVERSE ; ABS BLACK	2	
22	14084-0693-00	KNOB TUNING ; RCD-750 D/BLU ABS	1	
23	11474-0087-00	GEAR TUNING ; ABS BLK	1	
24	12203-0153-00	CHASSIS TUNING ; ABS BLK	1	
25	11514-0010-00	WHEEL DRUM ; ABS DEEP BLUE	1	
26	14164-0014-00	INDICATER ; RCD-750 WHT PP	1	
27	14084-0697-00	KNOB LEVER ; ABS DEEP BLUE	2	
28	12200-0152-00	CHASSIS MAIN ; ABS BLACK	1	
29	12689-0009-00	LATCH ASSY ; MOLD MAX-555	1	
30	13564-601-060	SWITCH-LEAF ; MSW-0080 CNBKP	1	
31	13324-0202-00	HOLDER P/T ; ABS BLACK	1	
32	16174-503-410	RUBBER CD ; SI RUBBER RCD-1200	4	
33	15104-531-710	SHAFT CD ; FE FZY 2.6X10.5	4	
34	16033-507-011	CAP PICK UP ; ABS HF-0660I BLACK	1	
35	*CMS A30AM6	DECK CD ; CMSA30AM6	1	
36	16624-580-810	BRACKET ANT ; SPTE T0.3 RCD-1300	1	
37	12000-0273-00	CABINET BACK ; MIPS DEEP BLUE	1	
38	14084-0696-00	KNOB VOLUME ; RCD-750 D/BLU ABS	1	

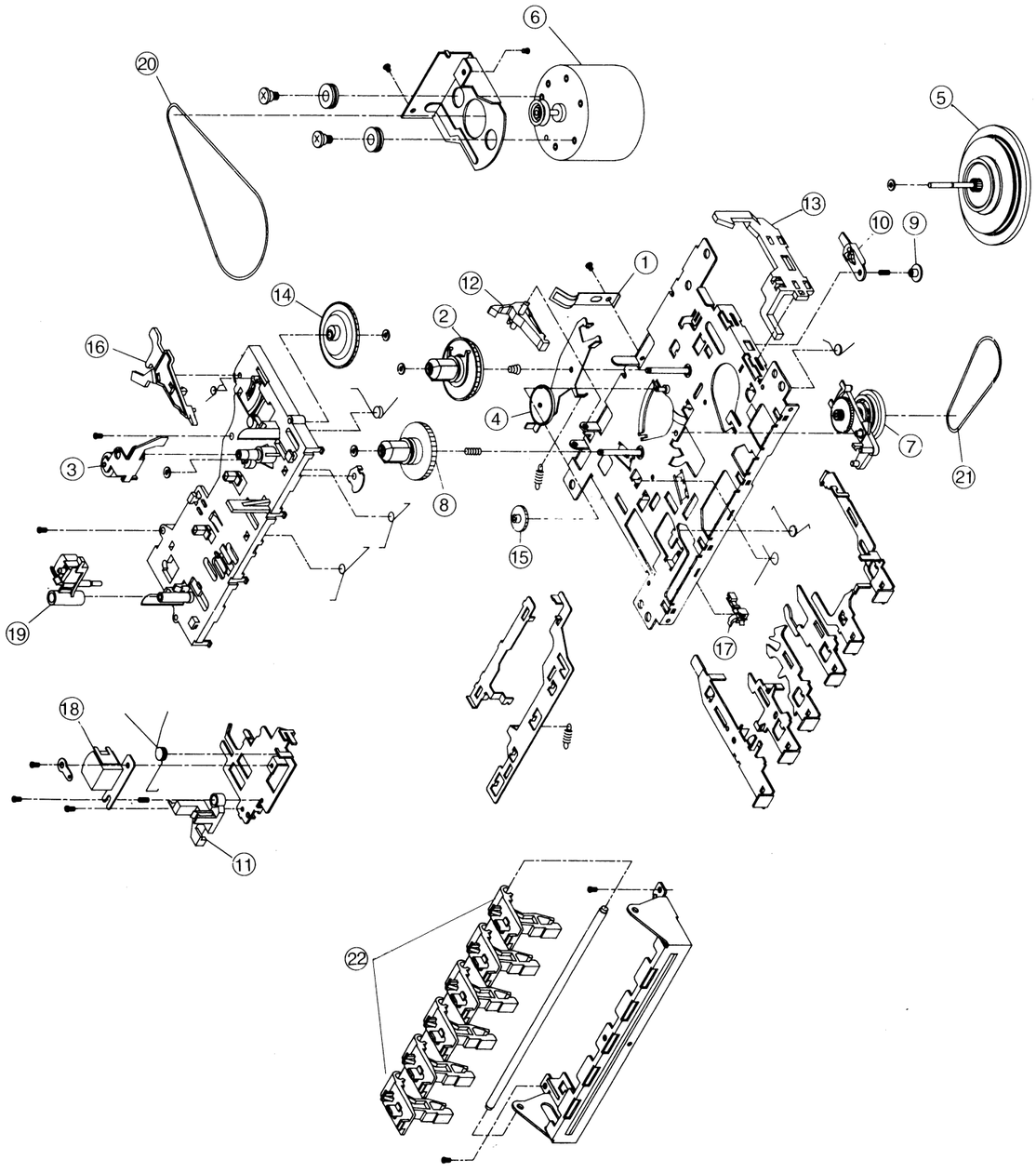
No.	Code no.	Description & Specification	Q'ty	Remarks
39	14084-0698-00	KNOB-TONE ; ABS DEEP BLUE	1	
40	14002-0041-00	GRILLE SPK,L ; SPC T0.6	1	
41	16674-531-770	SPRING BATTERY, - ; SUS PI 1.2	1	
42	16674-531-810	SPRING BATTERY, C ; SUS PI 1.2	1	
43	16674-531-610	SPRING BATTERY,B ; SUS PI 1.0	1	
44	14074-0263-00	WINDOW SCALE ; PC T0.5	1	
45	14509-316-050	ANT ROD ; 5.2PI 728MM 4S	1	
46	14103-0043-00	LID BATTERY ; RCD-750 D/BLU MIPS	1	
47	16603-511-840	CHUCK PLATE ; ABS +GA BLK	1	
48	12724-0203-00	SPRING CD ; RCD-750 SUS PI 1.2	1	
49	14042-0136-00	DOOR CD ; ABS DEEP BLUE	1	
50	14074-0255-00	WINDOW CD DOOR ; PC T0.5	1	
51	14032-0024-00	HANDLE ; ABS DEEP BLUE	1	

9-1-2. Exploded view (RCD-750)



9-2. Cassette deck exploded view and parts list

9-2-1. Cassette deck exploded view (ADR2015FR)



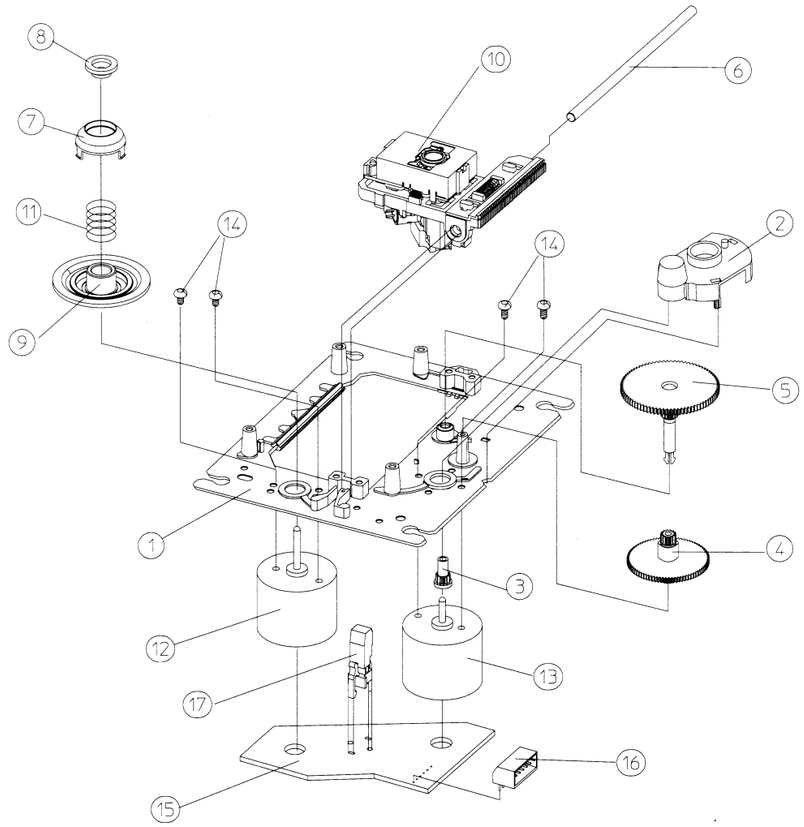
9-2-2. Cassette deck parts list

No.	Code no.	Specification & Description	Q'ty	Remarks
	17159-0085-00	DECK ASS'Y ; ADR2015FR	1	ASS'Y
1	10000-607-146	PACK-SPRING ; 51299-02506XC	1	
2	10000-607-101	TAKE UP REEL ASS'Y ; ADR28-010	1	"
3	10000-607-103	PINCH ARM ASS'Y ; ADR26-001	1	"
4	10000-607-104	IDLER ARM ASS'Y ; ADR02-042	1	"
5	10000-607-105	FLYWHEEL GEAR S ASS'Y ; ADR-021	1	"
6	10000-502-004	MOTOR; EG530AD 9B	1	"
7	10000-607-108	F.R ARM ASS'Y ADR22-012	1	"
8	10000-607-109	SUPPLY REEL GEAR ASS'Y ; 11128-00045AA	1	"
9	10000-607-116	PAUSE CAP ; 11117-00020AA	1	
10	10000-607-111	PAUSE LOCK CAM ; 11116-00011AA	1	
11	10000-607-113	HEAD BASE M ; 1105-00031AA	1	
12	10000-607-145	REC SAFETY LEVER ; 11134-01010AA	1	
13	10000-607-160	EJECT LEVER F ; 11134-01220AA	1	
14	10000-607-114	CAM GEAR ; 11128-00393AA	1	
15	10000-607-115	F.F GEAR ; 11128-00055AA	1	
16	10000-607-117	SENSOR ARM ; 11102-00530AA	1	
17	10000-607-178	LEAF SW (MAIN) ; MSW1541 X ACV	1	
18	10000-523-008	R/P HEAD ; MS15RAA2N1	1	
19	10000-542-002	E-HEAD; PHK380-MS16A	1	
20	10000-607-180	BELT(MAIN) ; ø45.5 x t1.0	1	
21	10000-607-156	BELT(SUB) ; ø34.7 x t1.0	1	
22	10000-607-128	BUTTON KNOB ; 11133-00010AA	6	

* Parts which are not described in the DECK list are not sericeable.
If you need any other parts except those described, apply DECK ass'y.

9-3. CDP deck exploded view & parts list

9-3-1. CDP deck exploded view(CMSA30AM6)

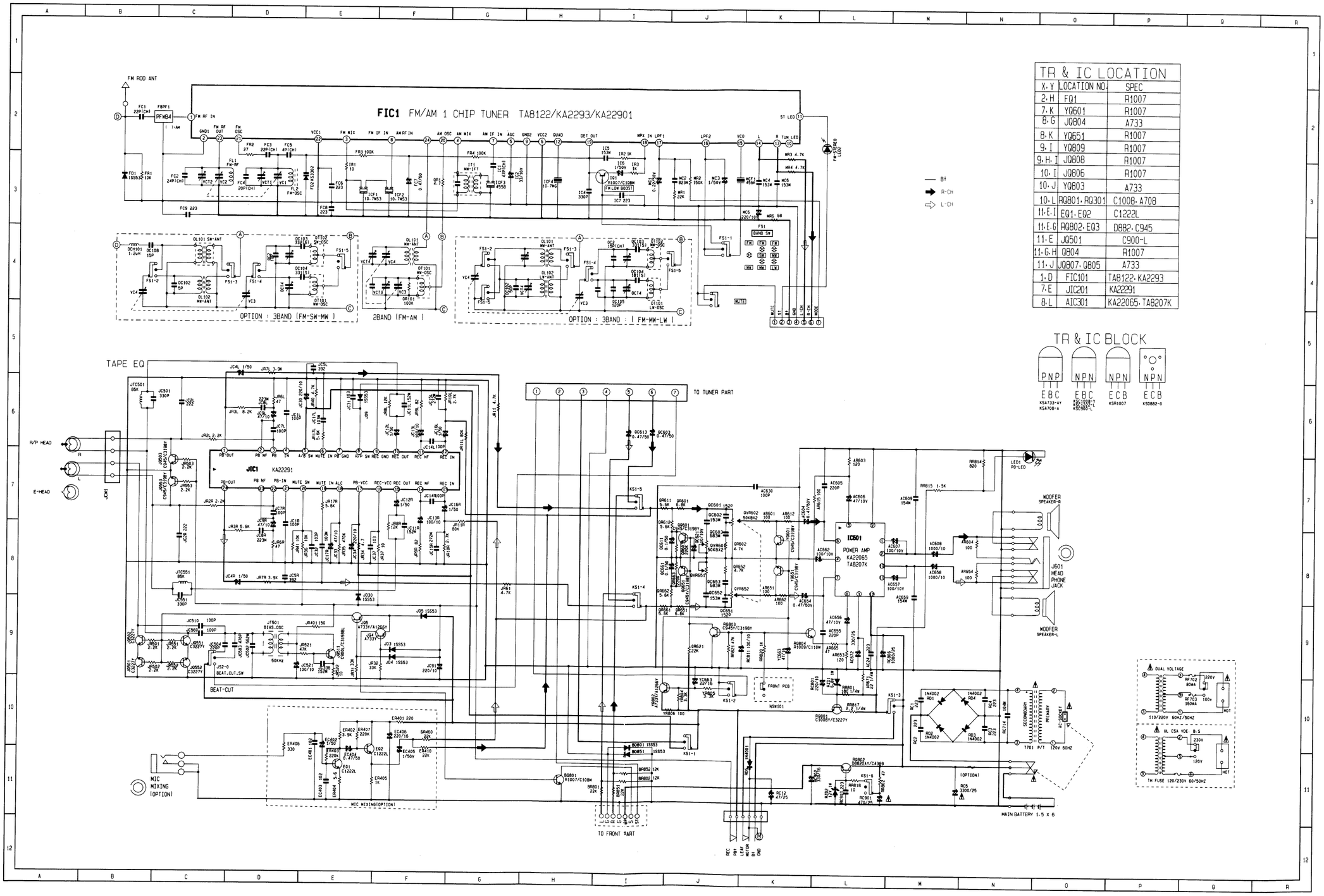


9-3-2. Parts list

No.	Code no.	Description	Specification	Q'ty	REM.
	CMSA30AM6	DECK-CD	CMS-A30AM6	1	
1	12201-0052-01	CHASSIS-DECK(M)	CMSA30 BLK POM M90-44	1	
2	13313-0057-00	COVER-GEAR	CMS-V30 BLK ABS	1	
3	11474-0017-00	GEAR(A)	CMS-V30 M0.3 Z13 SP POM	1	
4	11474-0018-00	GEAR(B)	CMS-V30 M0.3 Z14/Z82 SP POM	1	
5	11474-0019-00	GEAR(C)	CMS-V30 M0.3 Z16/Z90 SP POM	1	
6	11404-0041-00	SHAFT-PU	CMS-V30 D3 L79 SUS 420J2	1	
7	15253-503-010	CENTER-RING	ABS+GS 20%	1	
8	16034-504-510	CENTER-KNOB	ABS 94HB	1	
9	15253-503-520	TURN-TABLE(M)	ABS+GS 20%	1	
10	* SOH-A1	LASER PICK UP	CDP DECK CMS-A30 SOH-A1	1	
11	16674-559-410	SPRING-T/TABLE	CS STS-W PI0.4 D11.0 L11.0 CMS-V10	1	
12	14769-057-240	MOTOR-SPIN	RF-310T 38MM NDM4RA3NTLS 17.9MM CMS-V30	1	
13	14769-057-250	MOTOR-FEED	RF-310TA 30MM NDM4RA3ETL 11.0MM CMS-V30	1	
14	17008-120-032	SCREW-PH	+M2×3 FE FZY W700	1	
15	16024-0262-01	P.C.B - SUB	CMS-V34A T1.6 W163 L247 1V-0 CD DECK	1	
16	13349-139-061	CONNECTOR-WAFER	53015-0610 2.0MM	1	
17	13564-601-100	SWITCH-LEAF	MSW-1731CVC	1	

10. Schematic diagram

10-1. Main section

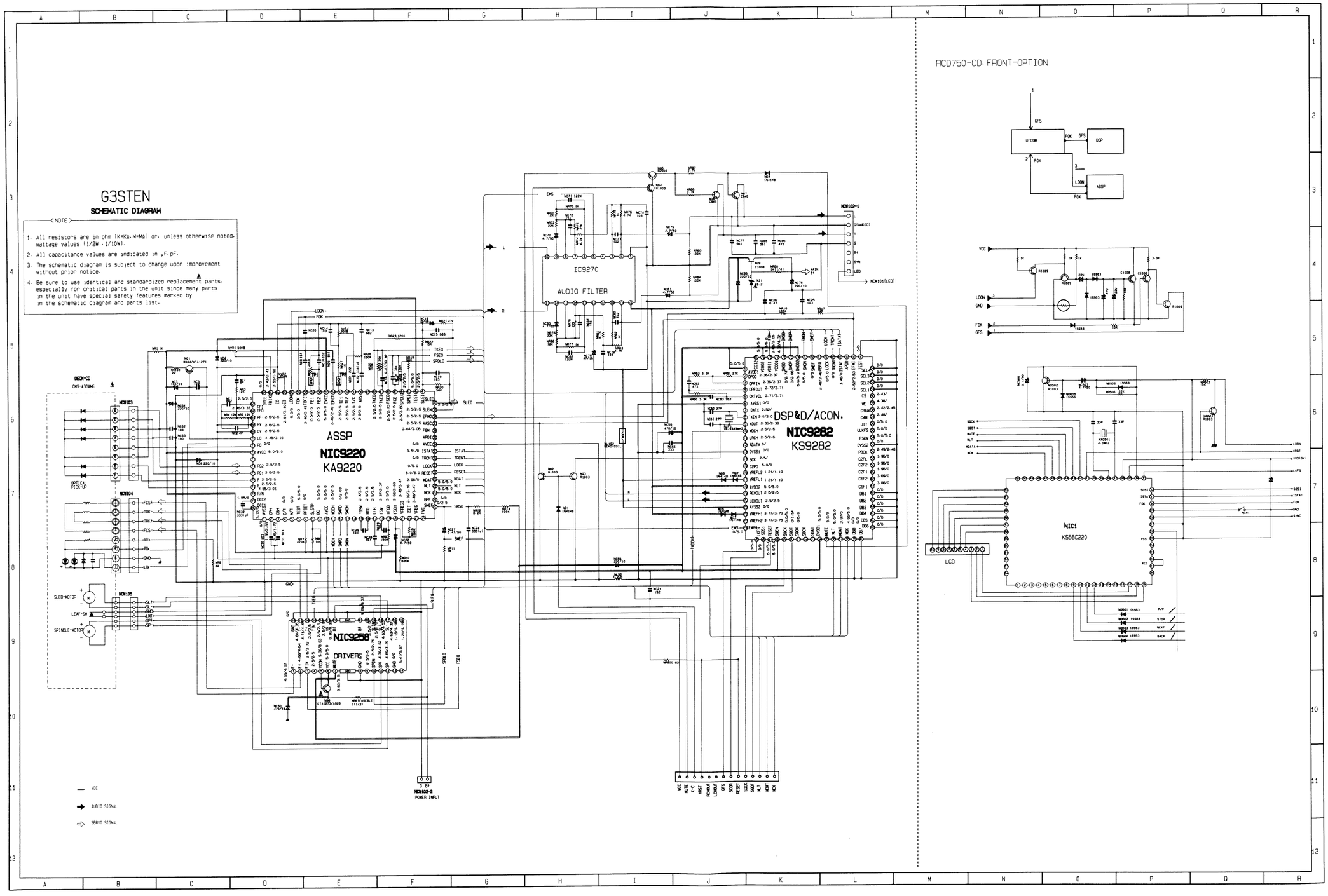


TR & IC LOCATION		
X.Y	LOCATION NO.	SPEC
2.H	FQ1	R1007
7.K	YQ601	R1007
8.G	JQ804	A733
8.K	YQ651	R1007
9.I	YQ809	R1007
9.H.I	JQ808	R1007
10.I	JQ806	R1007
10.J	YQ803	A733
10.L	RQ801.RQ301	C1008.A708
11.E.I	EQ1.EQ2	C1222L
11.E.G	RQ802.EQ3	D882.C945
11.E	JQ501	C900-L
11.G.H	QQ804	R1007
11.J	JQ807.QQ805	A733
1.D	FIC101	TA8122.KA2293
7.E	JIC201	KA22291
8.L	AIC301	KA22065.TAB207K

TR & IC BLOCK

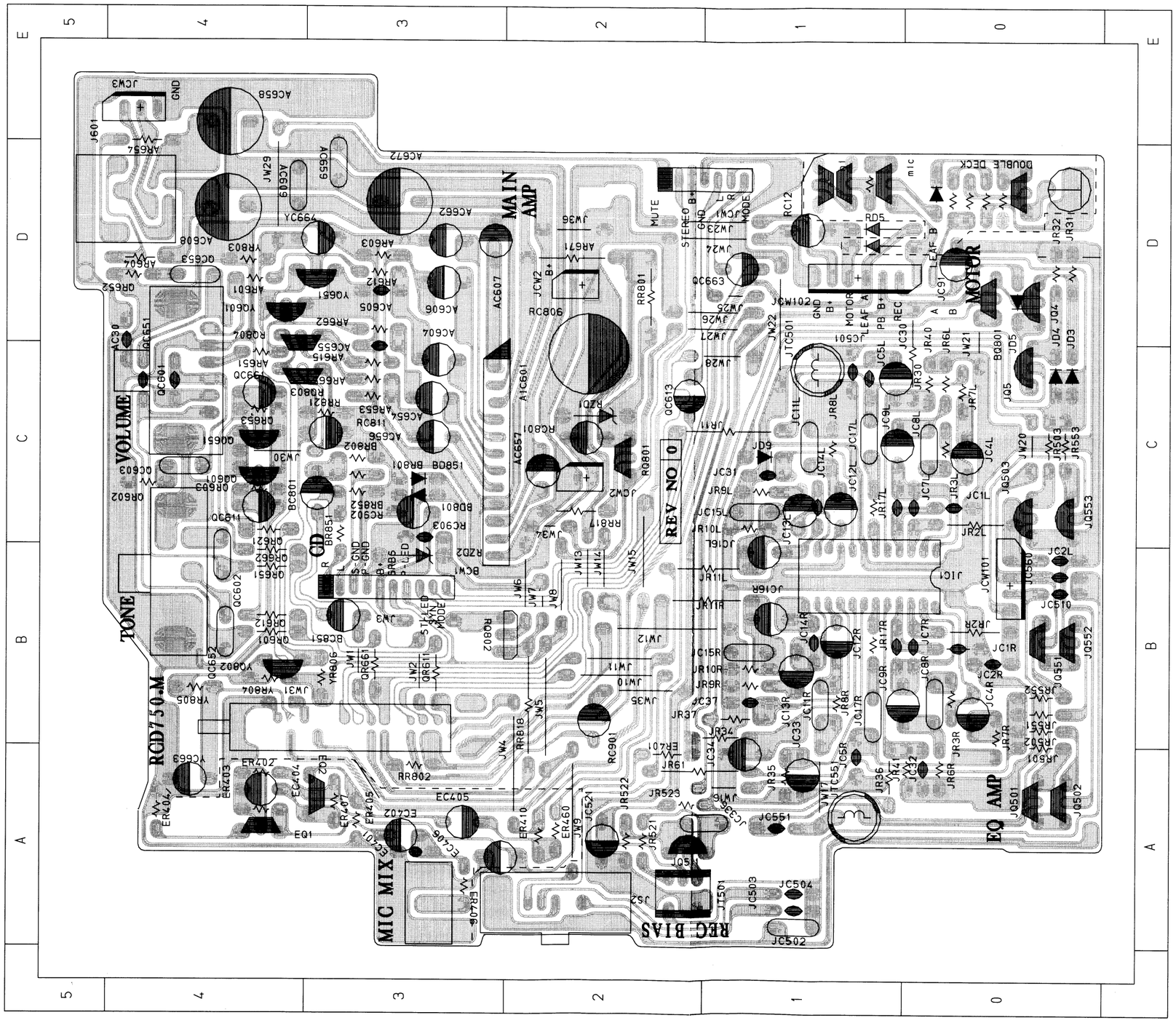
PNP	NPN	NPN	NPN
EBC	EBC	ECB	ECB
KSA733-AY KSA708-A	KSC1008-Y KSC1222-L KSC900-L	KSR1007	KSD882-O

10-2. CD section



11. PCB Pattern and Marking diagram

11-1. Main section



*** DIODE ***

BD801 (C3)
BD851 (C3)
JD3 (C0)
JD4 (C0)
JD5 (D0)
JD9 (C1)
RD5 (D1)
RZD1 (C2)
RZD2 (B3)

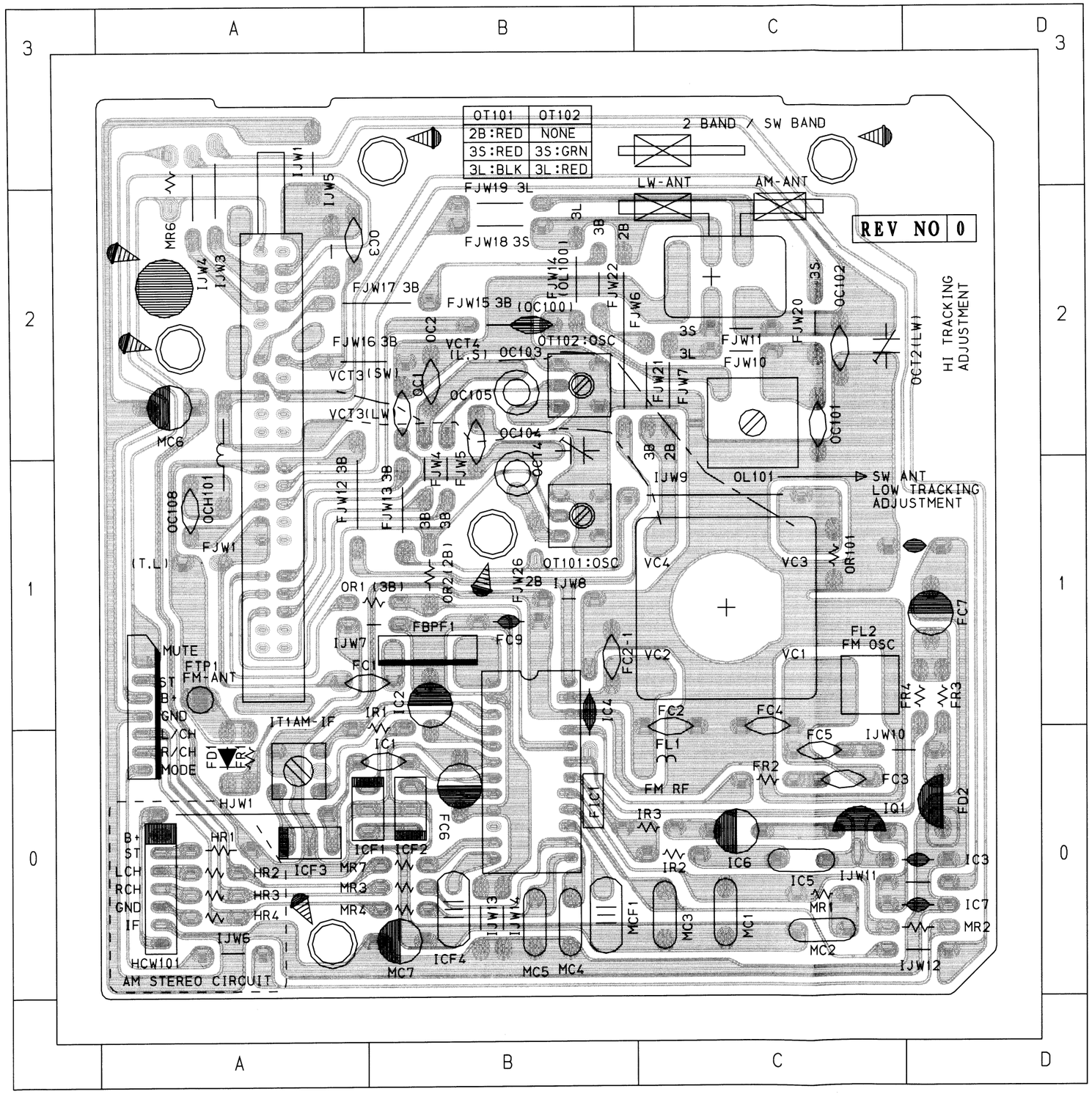
*** TR ***

BQ801 (D0)
EQ1 (A4)
EQ2 (A3)
JQ4 (D0)
JQ5 (C0)
JQ501 (A0)
JQ502 (A0)
JQ503 (C0)
JQ511 (A2)
JQ551 (B0)
JQ552 (B0)
JQ553 (C0)
QQ601 (C4)
QQ651 (C4)
RQ801 (C2)
RQ802 (B2)
RQ803 (C3)
RQ804 (D3)
YQ601 (D4)
YQ651 (D3)
YQ802 (B4)

*** IC&WAFER ***

AIC601 (C3)
BCW1 (B3)
JCW101 (B0)
JCW102 (D1)
JCW2 (C2)
JCW3 (E4)
JT501 (A2)

11-2. Tuner section



*** DIODE ***

FD1 (A0)

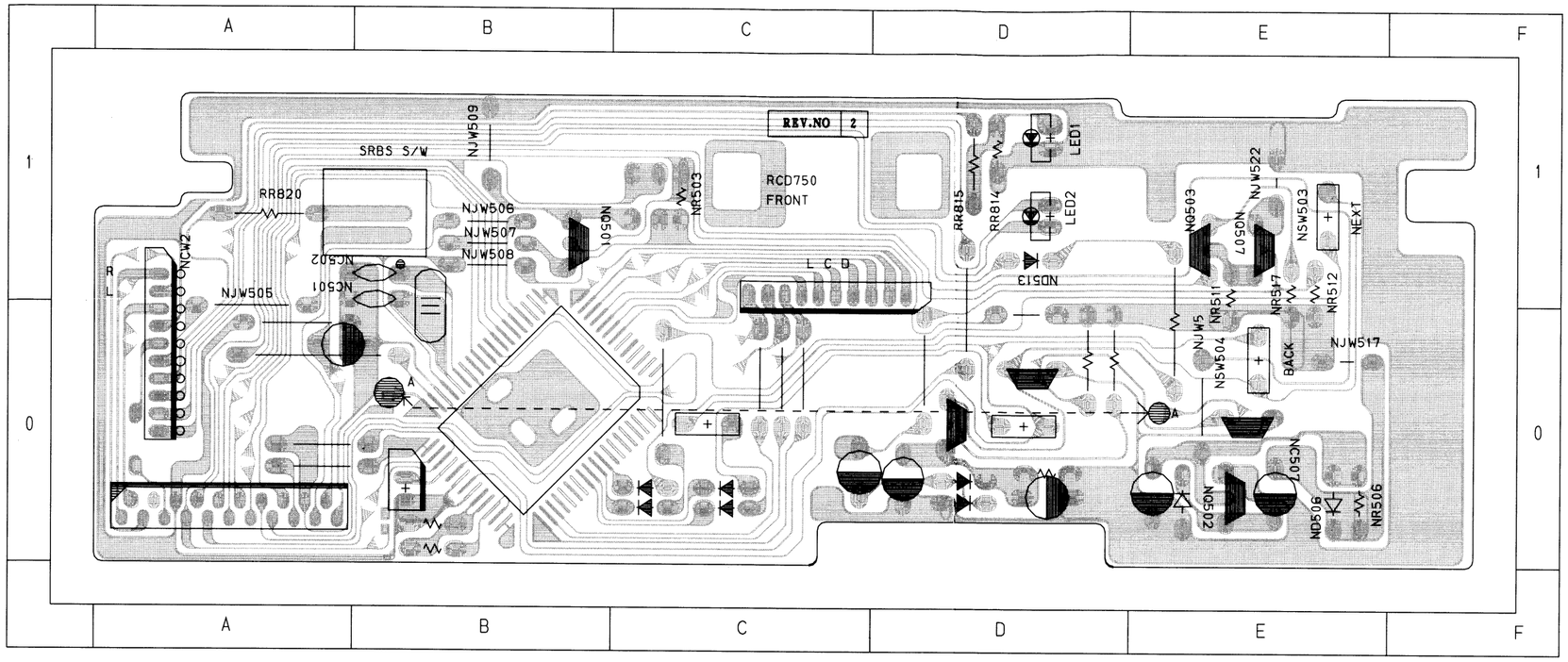
*** TR ***

FD2 (D0)
IQ1 (C0)

*** IC&WAFER ***

AM-IF (A0)
FL2 (C1)
HCW101 (A0)

11-3. Front section



*** DIODE ***

ND501 (C0)
ND502 (C0)
ND503 (C0)
ND504 (C0)
ND505 (E0)
ND506 (E0)
ND511 (D0)
ND512 (D0)
ND513 (D1)

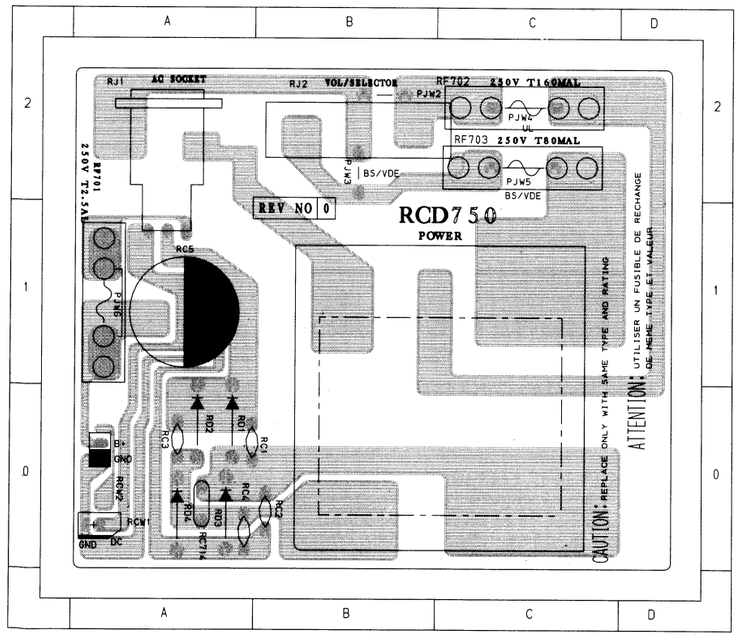
*** IC&WAFER ***

L C D (C1)
NCW1 (B0)
NCW2 (A0)
NCW3 (A0)
NSW501 (C0)
NSW502 (D0)
NSW503 (E1)
NSW504 (E0)

*** TR ***

NQ501 (B1)
NQ502 (E0)
NQ503 (E1)
NQ504 (D0)
NQ505 (D0)
NQ507 (E1)

11-4. Power section



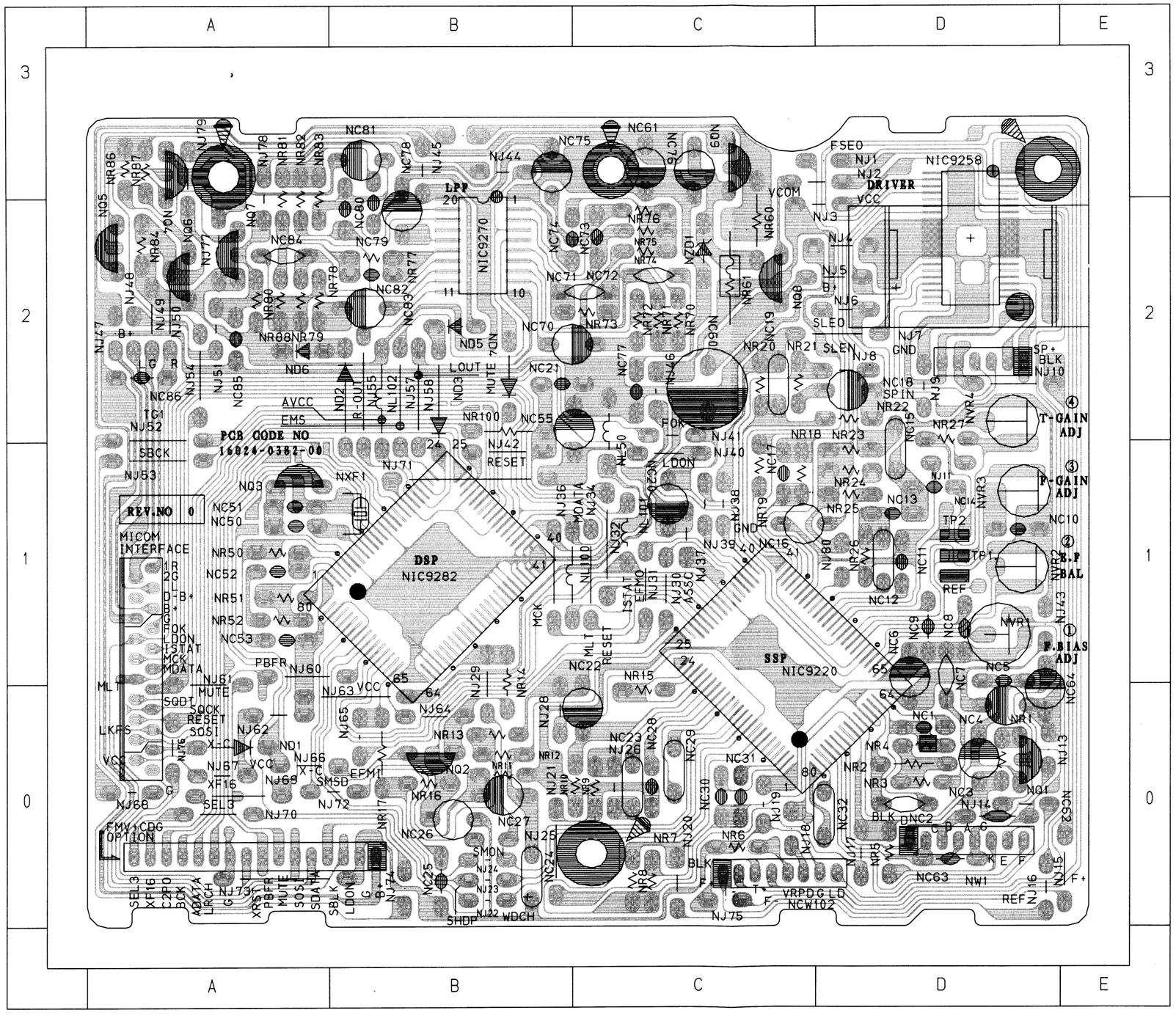
*** DIODE ***

RD1 (A1)
RD2 (A1)
RD3 (A0)
RD4 (A0)

*** IC&WAFER ***

RCW1 (A0)
RCW2 (A0)

11-5. CD section



*** DIODE ***

ND1 (A0)
ND2 (B2)
ND3 (B1)
ND4 (B2)
ND5 (B2)
ND6 (A2)
NZD1 (C2)

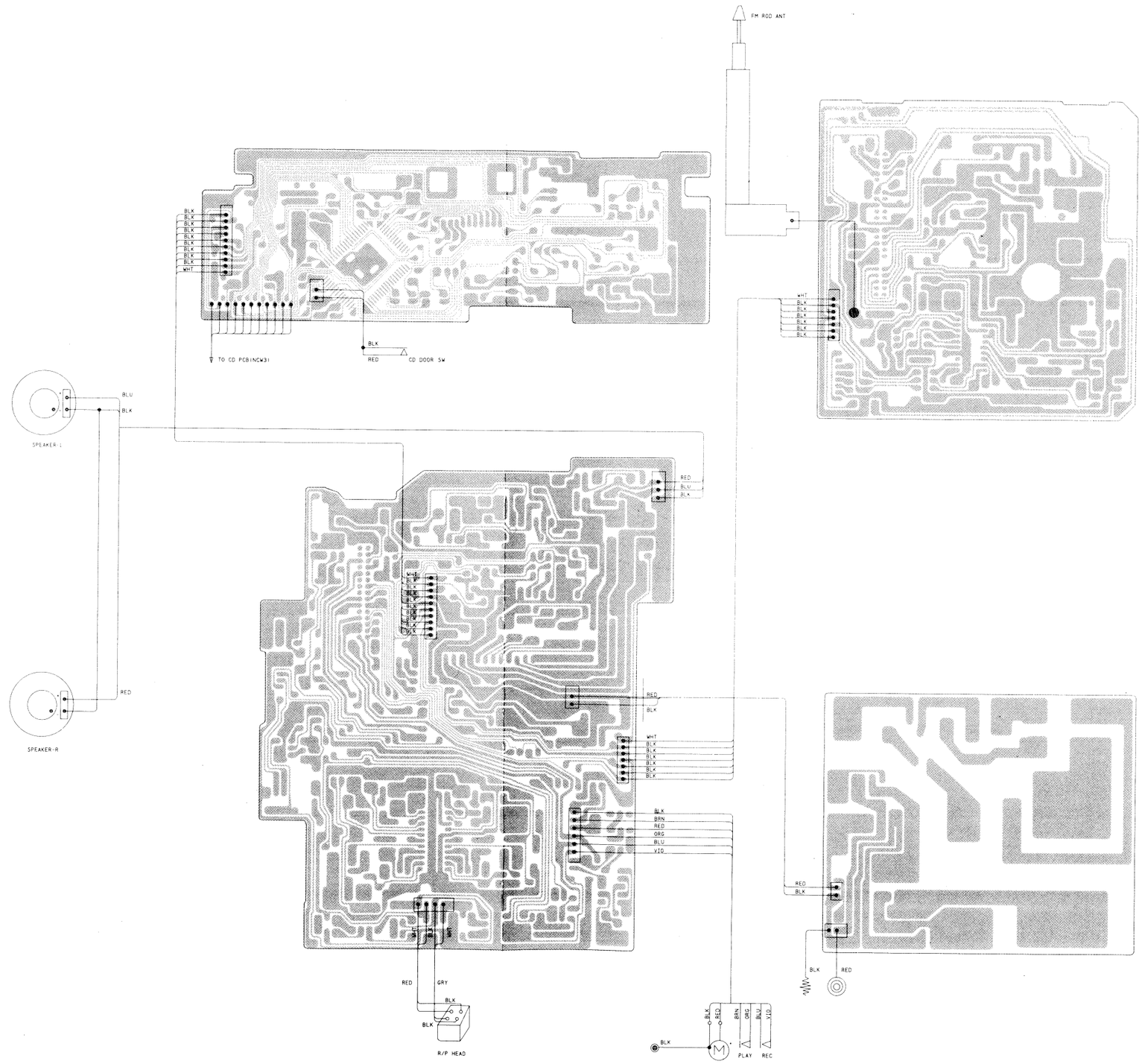
*** TR ***

NQ1 (D0)
NQ2 (B0)
NQ3 (A1)
NQ4 (A3)
NQ5 (A2)
NQ6 (A2)
NQ7 (A2)
NQ8 (C2)
NQ9 (C3)

*** IC&WAFER ***

NCW102 (C0)
NW1 (D0)

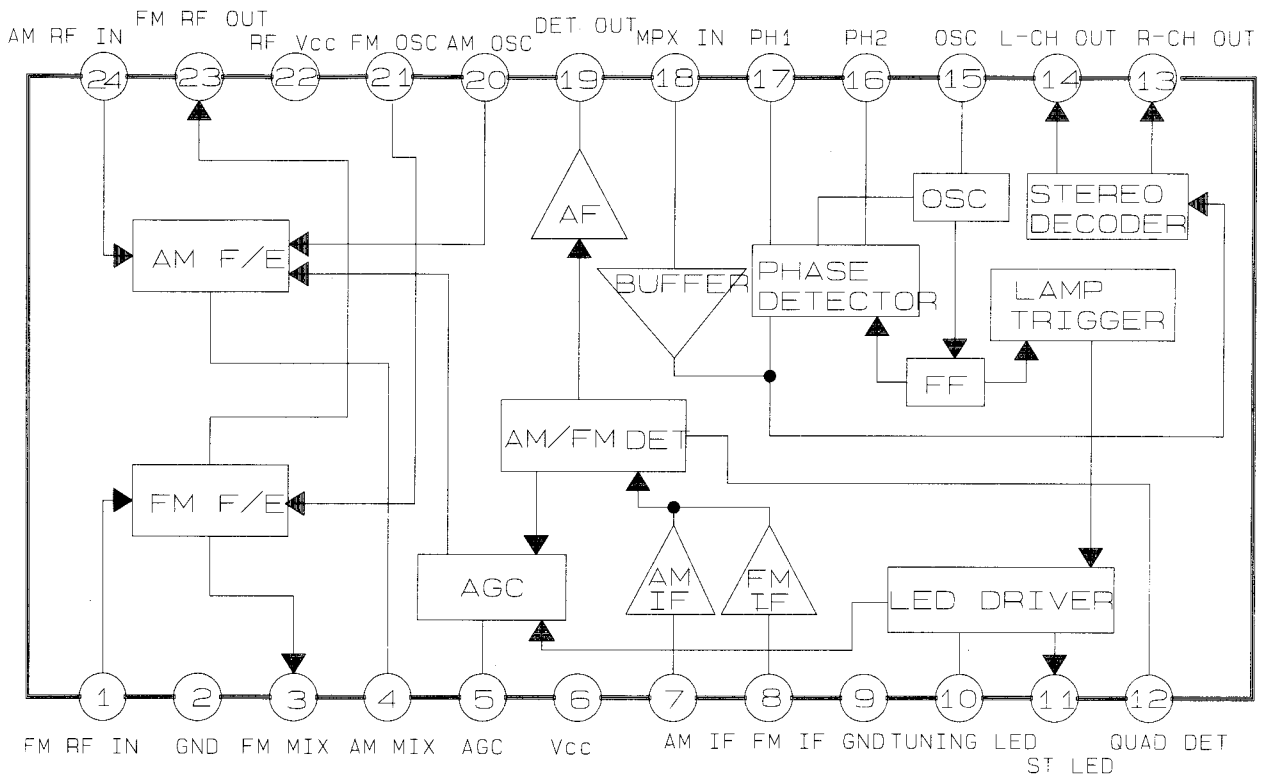
12. Wiring section



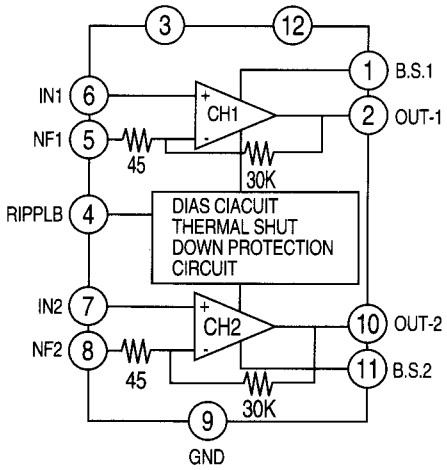
13. IC & TR internal diagram

13-1. Main section

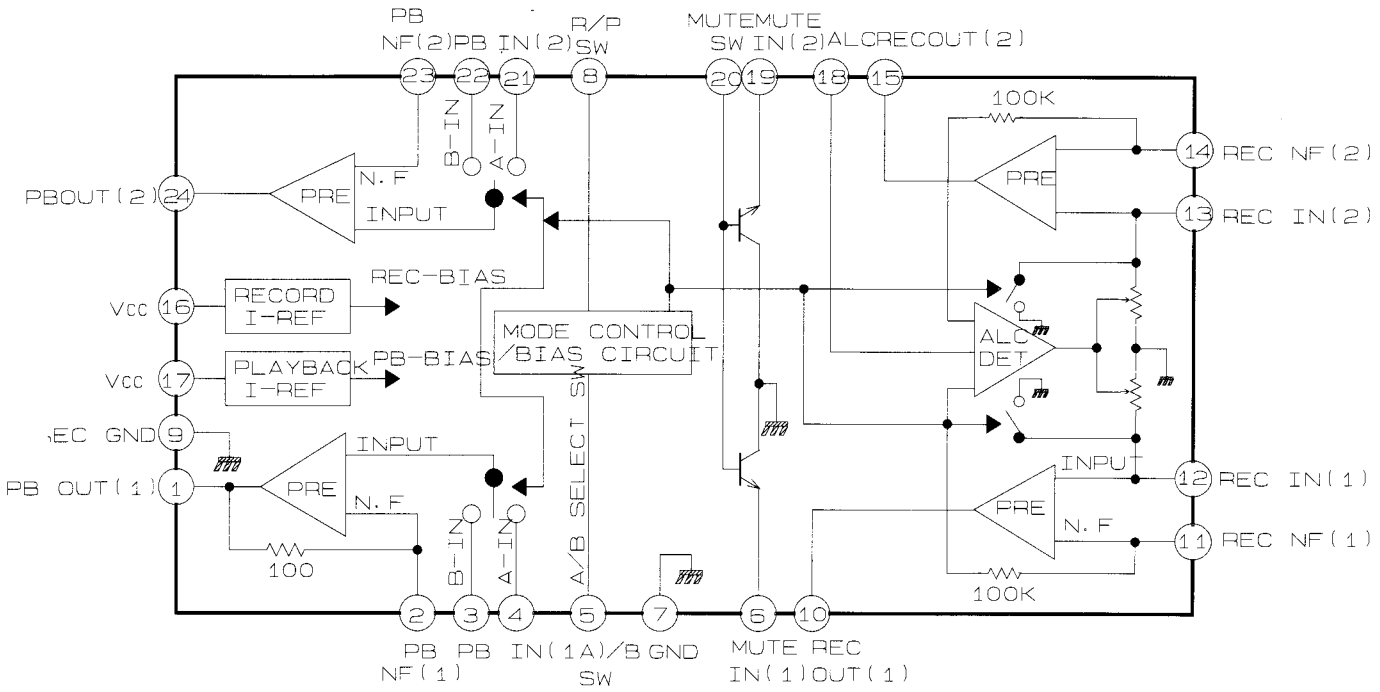
● KA2293 : FIC1



● TA8207 : AIC401 (KA22065)

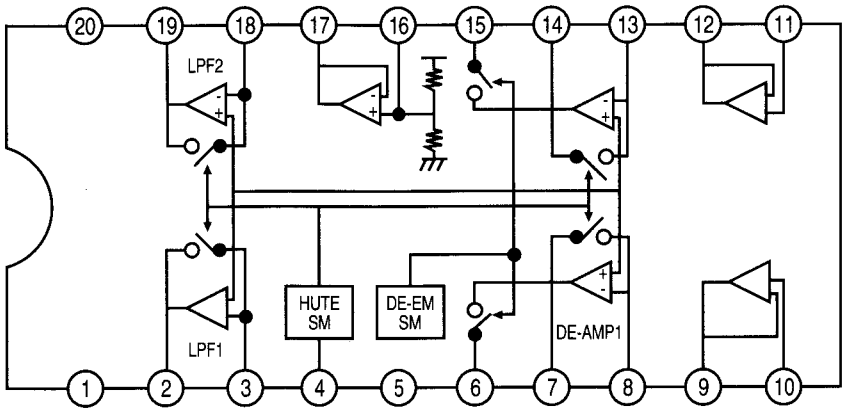


● KA22291 : JIC

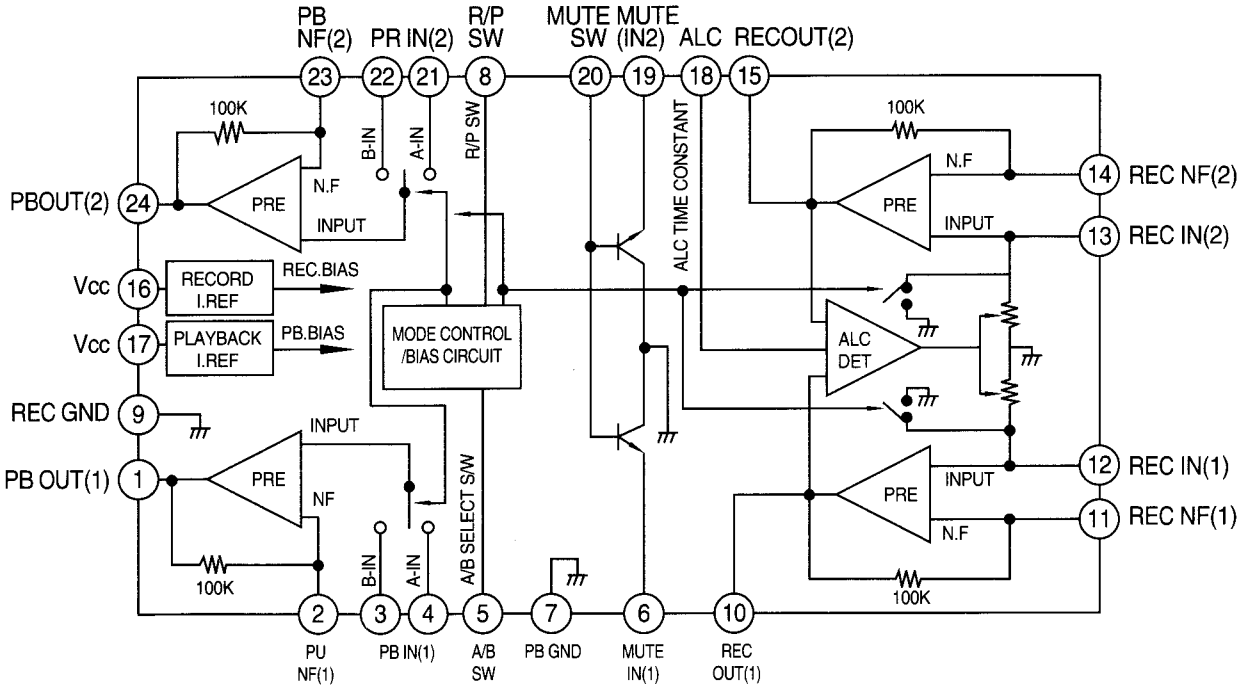

PB NF(2)
PB IN(2)
R/P SW
MUTEMUTE SW
IN(2)
ALCRECOUT(2)
23
22
21
8
20
19
18
15
100K
B-IN
A-IN
PBOUT(2)
24
PRE
N.F
INPUT
REC-BIAS
14
REC NF(2)
13
REC IN(2)
Vcc
16
RECORD I-REF
MODE CONTROL /BIAS CIRCUIT
ALC DET
Vcc
17
PLAYBACK I-REF
PB-BIAS
A/B SELECT SW
REC GND
9
PB OUT(1)
1
INPUT
PRE
N.F
100
12
REC IN(1)
11
REC NF(1)
100K
2
3
4
5
7
6
10
PB NF(1)
PB IN(1A)/B
GND
MUTE IN(1)
REC OUT(1)

13-2. CD section

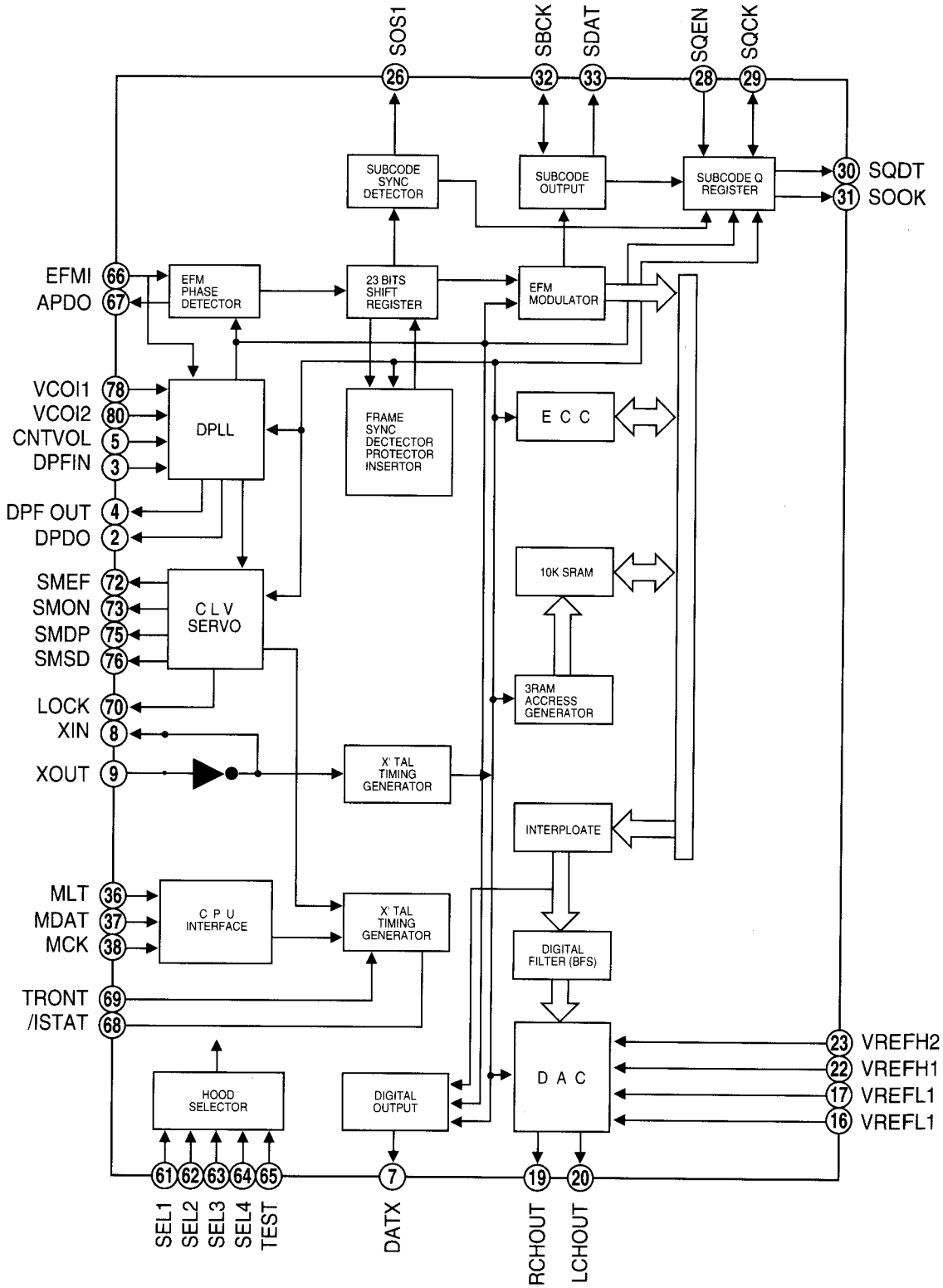
● KA9270 :NIC9270



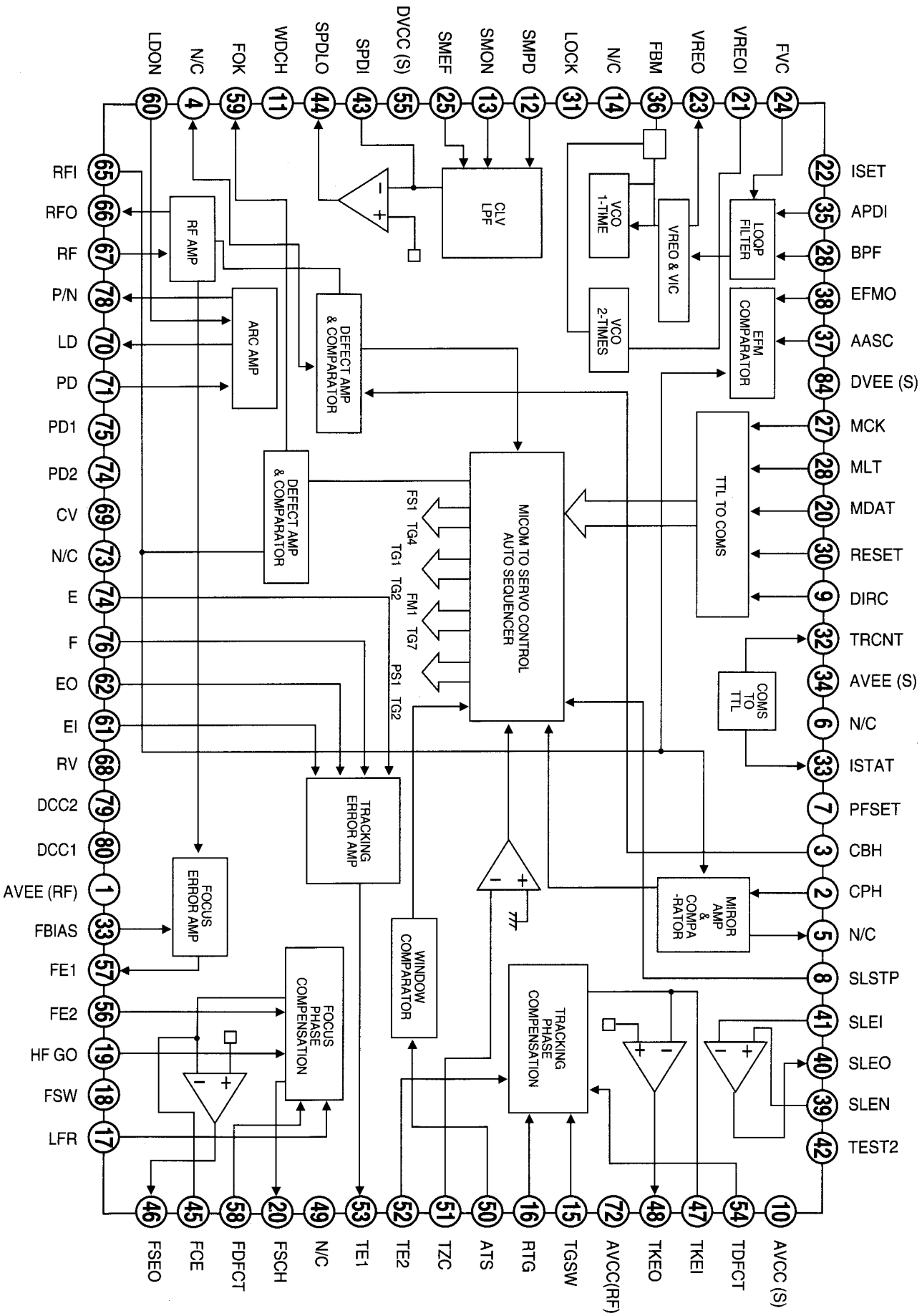
● KA9258 : NIC9258



● KS9282: NIC9282



● KA9220:NIC9220



14. Electrical parts list

14-1. Main section

Static electriciy

⚠ indicates parts for circuit safeguarding purposes. Therefore, when replacing,be sure to use specified parts only.

Location no.	Code no.	Description & Specification	Q'ty	Remark
RR801	11018-277-151	R-CARBON;RD 1/2T 150-J	1	
AR671	11018-277-220	R-CARBON;RD 1/4T 22-J	1	
RR817	11018-277-229	R-CARBON;RD 1/4T 2.2-J	1	
VOLUME	11209-804-020	VR-DOUBLE;RK16K12E0 Z01 53B	1	
TONE	11219-149-010	VR-DOUBLE;RK16K12L0 Z01 53A	1	
QC601,651	11447-619-152	CONDENSER AXIAL-LEAD;16V EP050 X1500-M	2	
JC2L,2R	11447-619-222	CONDENSER AXIAL-LEAD;16V EP050 X2200-W	2	
JC5L,5R	11447-619-392	CONDENSER AXIAL-LEAD;16V EP050 X3900-M	2	
JC31,32,37	11447-910-103	CONDENSER AXIAL-LEAD;16V EP050 Y10000-N	3	
RC903	11448-010-223	CONDENSER AIXAL-LEAD;25V TP 050F22000-Z	1	
JC7L,7R,14L,14R,510,560	11449-518-101	CONDENSER AXIAL-LEAD;50V UP050 B100-K	6	
JC504	11449-518-221	CONDENSER AXIAL-LEAD;50V UP050 B220-K	1	
JC501,551,AC605,655	11449-518-331	CONDENSER AXIAL-LEAD;50V UP050 B330-K	4	
JC503	11449-518-471	CONDENSER AXIAL-LEAD;50V UP050 B470-K	1	
AC609,659	11505-713-154	C-POLYESTER;TAPING 0.15MF-J 50V	2	
JC17L,17R	11505-714-103	C-POLYESTER;CQ921T M 50V 0.01M-K	2	
JC336,JC11L,11R	11505-714-152	C-POLYESTER;CQ921T M 50V 0.0015M-K	3	
QC602,652	11505-714-153	C-POLYESTER;CQ921T M 50V 0.015M-K	2	
JC15L,15R	11505-714-222	C-POLYESTER;CQ921T M 50V 0.0022M-K	2	
JC8L,8R	11505-714-223	C-POLYESTER;CQ921T M 50V 0.022M-K	2	
JC502	11505-714-562	C-POLYESTER;CQ921T M 50V 0.0056M-K	1	
QC603,653	11505-714-683	C-POLYESTER;CQ921T M 50V 0.068M-K	2	
AC608,658	11608-102-102	C-ELECTROLYTIC;SHL T10V 1000M(10X12.5)	2	
AC607,657,662,RC811,	11608-102-104	C-ELECTROLYTIC;SMS T 10V 100M(5X11)	6	
JC13L,13R,JC34,30,RC801	11608-102-224	C-ELECTROLYTIC;SMS T 10V 220M(6.3X11)	3	
AC606,656,YC664,JC521	11608-102-473	C-ELECTROLYTIC;SMS T 10V 47M(5X11)	7	
9L,9R,33,JC91	11608-103-221	C-ELECTROLYTIC;SMS T 16V 220M(8X11.5)	1	
YC663	11608-103-223	C-ELECTROLYTIC;SMS T 16V 22M(5X11)	1	
AC672	11608-104-331	Q-ELECTROLYTIC;SMS T 25V 330M(10X12.5)	1	
RC12	11608-104-473	C-ELECTROLYTIC;SMS T 25V 47M(5X11)	1	
BC801,851,JC16L,16R,12L	11608-106-102	C-ELECTROLYTIC;SMS T 50V 1M(5X11)	6	
12R,JC4L,4R			2	
QC611,661	11608-106-111	C-ELECTROLYTIC;SMS T 50V 0.1M(5X11)	2	
AC604,654	11608-106-471	C-ELECTROLYTIC;SMS T 50V 0.47M(5X11)	2	
AIC601	12119-101-290	IC-POWER AMP;TA8207K	1	
RQ803,804	12159-301-790	TR DIGITAL;KSR1009/KRC110M TAPE	2	
BQ801	12159-301-800	TR-DIGITAL;KSR1007/KRC108M TAPE	1	
RD5	12169-201-090	DIODE-RECTIFIER;1N 4002,TAPE	1	
BD801,851,JD3,4,5,9	12169-301-290	DIODE-SW;1SS53/1N4148,CT:6PF	6	
RZD2	12169-403-910	DIODE-ZN;1W11.4-12.6V UZP-12B	1	
RZD1	12169-404-100	DIODE-ZN;RD6.8FB/UZP6.8B	1	
JTC501,551	12429-306-113	COIL-BIAS TRAP;FB895-85A	2	

Location no.	Code no.	Description & Specification	Q'ty	Remark
JT501	12619-012-811	COIL-SEVEN CAN;1R65HH I-BIAS	1	
J601	13339-101-502	JACK-HEADPHONE;SHQ9085-01- 142(GRN)	1	
JCW1	13349-240-071	CONNECTOR-JUMP;2MM 51048-0700 7P	1	
BCW1	13349-240-101	CONNECTOR-JUMP;2MM 51048-1000 10P	1	
JCW2	13349-512-561	CONNECTOR-WAFER;5267-02A 2P TYPE	1	
JCW101	13349-512-562	CONNECTOR-WAFER;5267-04A 4P STICK	1	
JCW102	13349-512-565	CONNECTOR-WAFER;5267-06A 6P STICK	1	
JCW3	13349-527-502	CONNECTOR-WAFER;5267-03A 3P STICK	1	
JS2	13519-930-160	SWITCH-SLIDE;00130101,1C-3P	1	
F/SWITCH	13549-801-370	SWITCH-LEVER;T00630003	1	
JIC1	A4012-0070	IC-LINEAR;KA22291 DIP PRE/REC AMP	1	
YQ802,JQ4,5	A4050-0156	TR-GENERAL;KSA733C-Y/KTA1266-Y 250M	3	
JQ503,553,QQ601,651	A4050-0168	TR-GENERAL;KSC945C-Y/KTC3198-Y 250M	4	
YQ601,651			2	
JQ511	A4050-0189	TR-GENERAL;KSC900C-L/KTC3198L-BL 25	1	
JQ501,502,551,552,RQ801	A4050-0197	TR-GENERAL;KTC3227-Y 1W 400MA 100MH	5	
RQ802	A4052-0073	TR-HIGH POWER;KTC4369-O 15W 3A 100M	1	
BCW1, JCW1	A6032-0034	WIRE-PLATE;10/200 2877#26(T) BLK	2	

14-2. Tuner section

Location no.	Code no.	Description & Specification	Q'ty	Remark
OC3	11407-017-101	C-CERAMIC;CC45T SL 50V 100-J	1	
FC5	11407-052-309	C-CERAMIC;CC45T CH 50V 3-C	1	
FC1,3,4	11407-057-220	C-CERAMIC;CC45T CH 50V 22-J	3	
FC2	11407-057-240	C-CERAMIC;CC45T CH50V 24-J TAPE	1	
IC1	11407-057-470	C-CERAMIC;CC45T CH 50V 47-J	1	
FC9,IC7	11448-010-223	CONDENSER AIXAL-LEAD;25V TP 050F220	2	
IC4	11449-518-331	CONDENSER AXIAL-LEAD;50V UP050 B330	1	
MC4,5,IC5	11505-714-153	C-POLYESTER;CQ921T M 50V 0.015M-K	3	
MC3	11505-714-683	C-POLYESTER;CQ921T M 50V 0.068M-K	1	
MC1,2	11505-714-823	C-POLYESTER;CQ921T M50V 0.082M-K	2	
FC6	11608-102-104	C-ELECTROLYTIC;SMS T 10V 100M(5X11)	1	
MC6	11608-102-224	C-ELECTROLYTIC;SMS T 10V 220M(6.3X11)	1	
IC2	11608-102-333	C-ELECTROLYTIC;SMS T 10V 33M(5X11)	1	
IC6	11608-106-102	C-ELECTROLYTIC;SMS T 50V 1M(5X11)	1	
FC7	11608-106-471	C-ELECTROLYTIC;SMS T 50V 0.47M(5X11)	1	
IQ1,MQ1	12159-301-800	TR-DIGITAL;KSR1007/KRC108M TAPE	2	
FD1	12169-301-290	DIODE-SW;1SS53/1N4148,CT:6PF	1	
FD2	12169-501-160	DIODE-AFC;KS3302	1	
FL2	12450-315-311	COIL-OSC FM;0.5PI 0.1UH 1.7/8T	1	
FL1	12609-132-430	COIL-H,SPRING;4T R8P4D CCW CLS N-AD	1	
FTP1	13124-100-710	TAP-STUD;0.5T SPC1 BT2	1	
FCW1	13349-173-071	CONNECTOR-TRAP;2MM 52147-0710 7P	1	
ICF1,2	14529-301-753	FILTER-CERAMIC;SFE 10.7MS3G-A-TF21	2	
ICF4	14529-302-923	CERAMIC-FILTER;CDA10.7MG16-A-TF01	1	
ICF3	14529-315-010	CERAMIC-FILTER;SFU 455B	1	
FBPF1	14529-403-010	FILTER-L.C;PFW-B4 RF-PF TYPE	1	
MCF1	14539-504-050	CERAMIC-RESONATOR;CSB 456 F18	1	
FIC1	A4012-0072	IC-LINEAR;KA2293 DIP FM/AM	1	

Location no.	Code no.	Description & Specification	Q'ty	Remark
OR1	11018-877-221	R-CARBON;RN 1/8T 220-J	1	
OC105	11407-052-509	C-CERAMIC;CC45T CH 50V 5-C	1	
OC102	11407-053-709	C-CERAMIC;CC45T CH 50V 7-D	1	
OC2	11407-057-100	C-CERAMIC;CC45T CH 50V 10-J	1	
OC108	11407-057-150	C-CERAMIC;CC45T CH 50V 15-J	1	
OC104	11509-452-100	C-POLYSTYRENE;CQ09S 50V 330-J	1	
OC103	11509-452-220	C-POLYSTYRENE;CQ 09 S 50V 3300-J	1	
MC6	11608-102-224	C-ELECTROLYTIC;SMS T 10V 220M(6.3X11)	1	
OCT4	11829-512-030	C-TRIMMER;TZ03R 20PF	1	
OL101	12509-805-020	COIL-ANT,SW;9.5M/M	1	
OT101	12619-050-703	COIL-SEVEN CAN;AQ 200UH FMW(TA8167)	1	
OT102	12619-173-126	COIL 7 CAN;2.73NH AQ FSW GREEN	1	
VCT3,4	13049-011-110	WIRE MONO;1007#26(T)U/C,BLK 100MM	2	
BAND S/W	13549-801-310	SWITCH-LEVER;T0083002 8C-3P A-SHORT	1	
VARICON	A1115-0025	VARICON-POLY;L2Z-22BPT M53	1	
ANT COIL	A1140-0009	COIL-FERRITE ANT;FE-D 280UH PI8 60MM	1	

L BAND (OPTION)

Location no.	Code no.	Description & Specification	Q'ty	Remark
OC102	11407-017-560	C-CERAMIC ; CC45T SL 50V 56-J	1	
OC105	11407-057-101	C-CERAMIC ; CC45T CH 50V 100-J	1	
OC104	11509-452-070	C-POLYSTYRENE ; CQ 09 S 50V 180-J	1	
LW-ANT	12514-281-576	COIL-FERRITE ANT ; FE-D 285UH/3.0MH	1	
OCT101	12619-177-902	COIL-SEVEN CAN; AQ 560UH FLW BRN	1	

14-3. Front section

Location no.	Code no.	Description & Specification	Q'ty	Remark
NC501,502	11407-057-330	C-CERAMIC;CC45T CH 50V 33-J	2	
NC503,504	11448-010-223	CONDENSER AIXAL-LEAD;25V TP 050F220	2	
NC505	11608-103-333	C-ELECTROLYTIC;SMS T 16V 33M(5X11)	1	
NC506	11608-106-111	C-ELECTROLYTIC;SMS T 50V 0.1M(5X11)	1	
NC507	11608-106-472	C-ELECTROLYTIC;SMS T 50V 4.7M(5X11)	1	
NQ501,502	12159-301-780	TR DIGITAL;KSR1003/KRC103M TAPE	2	
ND501,502,503,504 505,506	12169-301-290	DIODE-SW;1SS53/1N4148,CT:6PF	6	
LED2	12309-110-210	LED;KLG-124	1	
LED1	12309-115-330	LED;KLR124	1	
NCW2	13349-173-101	CONNECTOR-TRAP;2MM 52147-1010 WHT	1	
NCW1	13349-512-561	CONNECTOR-WAFER;5267-02A 2P TYPE	1	
NSW101	13529-203-930	SW-PUSH;SPEA122S C011	1	
NX501	14534-504-043	CERAMIC-RESONATOR;CSA 4.00MG-TF01S	1	
NSW501,502,503,504	A3018-0028	SW-TACK,H;SKHV10914A 6X9.5MM 1KEY	4	
NIC1	A4002-0632	IC-CPU;KS56C220-XXXX RCD-750 QFP BULK	1	
LCD	A4155-0075	LCD;LE-0216A RCD-750	1	
NCW3	A6010-1611	CONNECTOR-WAFER;28-6216-021-100-808	1	

14-4. Power section

Location no.	Code no.	Description & Specification	Q'ty	Remark
RC1,2,3,4	11417-344-103	C-CERAMIC;CK45T F 50V 0.01M-Z	4	
RC5	11609-401-740	C-ELECTROLYTIC;SMS 25V 2200M(16X25)	1	
RD1,2,3,4	12169-201-090	DIODE-RECTIFIER;1N 4002,TAPE	4	
RCW2	13078-462-120	CONNECTOR-WIRE/B,S;5264-02/5395-02	1	
RCW1	13349-512-561	CONNECTOR-WAFER;5267-02A 2P TYPE	1	
RC714	A1102-0164	C-FILM;CF 922 P 63V T 104-J PM/ECQ-BIH104JF3	1	
RJ1 AC-SCOCKET	13354-501-320	SOCKET-2P,SW(CP);HSC1466-01-0101	1	Option
RJ2 VOL/SEL	13599-502-050	VOLT SELECT ; PCB 00120353G1 110-127V/220-240V	1	"
POWER TRANS	A1190-0132	TRANS-POWER; EI48X20 115/230V 50/60HZ	1	"

14-5. CD section

14-5-1. Main part

Location no.	Code no.	Description & Specification	Q'ty	Remark
NR60	11018-277-121	R-CARBON;RD 1/4T 120-J	1	
NR61	11058-377-229	R-FUSIBLE;RF 1/2T 2.2-J	1	
NVR2,3,4	11249-102-044	VR-SEMI TAPE-H;EVN CYA/EVN-DJAA30 B	3	
NVR1	11249-102-064	VR-SEMI TAPE-H;EVN CYA/EVN-DJAA30 B	1	
NC72,84	11407-018-151	C-CERAMIC;CC45T SL 50V 150-K	2	
NC2	11407-052-409	C-CERAMIC;CC45T CH 50V 4-C	1	
NC7	11407-057-809	C-CERAMIC;CC45T CH50 8-J	1	
NC20	11417-344-103	C-CERAMIC;CK45T F 50V 0.01M-Z	1	
NC82	11447-619-122	CONDENSER AXIAL-LEAD;16V EP050 X120	1	
NC21,53	11447-619-152	CONDENSER AXIAL-LEAD;16V EP050 X150	2	
NC11	11447-619-222	CONDENSER AXIAL-LEAD;16V EP050 X220	1	
NC1,13	11447-619-682	CONDENSER AXIAL-LEAD;16V EP050 X680	2	
NC14,30,31,74,79,25	11447-910-103	CONDENSER AXIAL-LEAD;16V EP050Y100	6	
NC8,9,28	11449-010-104	CONDENSER AXIAL-LEAD;50V UP F100000-Z	3	
NC52,77	11449-010-473	CONDENSER AXIAL-LEAD;50V UP F47000-Z	2	
NC50,51	11449-117-330	CONDENSER AXIAL-LEAD;50V UP 050 SL33-J	2	
NC5,10,73,80	11449-518-102	CONDENSER AXIAL-LEAD;50V UP050 B1000-K	4	
NC17	11449-518-331	CONDENSER AXIAL-LEAD;50V UP050 B330-K	1	
NC85,86	11449-518-561	CONDENSER AXIAL-LEAD;50V UP050 B560-K	2	
NC19	11505-714-103	C-POLYESTER;CQ921T M 50V 0.01M-K	1	
NC71	11505-714-122	C-POLYESTER;CQ921T M 50V 0.0012M-K	1	
NC12,24,32	11505-714-333	C-POLYESTER;CQ921T M 50V 0.033M-K	3	
NC15	11505-714-683	C-POLYESTER;CQ921T M 50V 0.068M-K	1	
NC3	11608-102-104	C-ELECTROLYTIC;SMS T 10V 100M(5X11)	1	
NC4,6,55	11608-102-224	C-ELECTROLYTIC;SMS T 10V 220M(6.3X11)	3	
NC76	11608-102-331	C-ELECTROLYTIC;SMS T 10V 330M(8X11.5)	1	
NC78	11608-102-473	C-ELECTROLYTIC;SMS T 10V 47M(5X11)	1	
NC18	11608-103-103	C-ELECTROLYTIC;SMS T 16V 10M(5X11)	1	
NC60	11608-103-471	C-ELECTROLYTIC;SMS T 16V 470M(10X12.5)	1	
NC27	11608-106-471	C-ELECTROLYTIC;SMS T 50V 0.47M(5X11)	1	
NC22,70,75,81,83	11608-106-472	C-ELECTROLYTIC;SMS T 50V 4.7M(5X11)	5	
NC16,26	11608-206-478	C-ELECTROLYTIC;NP SMS T 50V 0.47M(5	2	
NQ8	12139-201-100	TRANSISTOR;KSA928A-Y/KTA1273-Y TAPE	1	
NQ4	12159-301-330	TR-DIGITAL;KSR2003/KRA103M TAPE	1	
NQ2,3,5	12159-301-780	TR DIGITAL;KSR1003/KRC103M TAPE	3	
ND1,2,3,4,5,6	12169-301-400	DIODE-SWITCH;1N4148M ROHM(SMALL)	6	
NZD1	12169-403-310	DIODE-ZENER;UZ 5.1B/RD5.1 0.5W	1	
NL50	12429-070-350	COIL-CHOKE;AX 1.2UH-03(LAL03TB1R2M)	1	
NL101,NL100	12429-411-100	COIL-CHOKE;AX 10UH-02(LA02TB100K)	2	
NL102	14049-033-420	FERRITE BEAD;INDVCTOR 3857S TAPE	1	
NC23,29	A1102-0164	C-FILM;CF 922 P 63V T 104-J PM/ECQ-BIH104JF3	2	
NQ6,7	A4050-0168	TR-GENERAL;KSC945C-Y/KTC3198-Y 250M	2	
NQ1	A4050-0186	TR-GENERAL;KTA1271-Y 625MW -800MA 120MHZ	1	
	A4155-0078	LCD;LE-0636EP CDP	1	
	A6010-1683	CONNECTOR-WAFER;90059-0013 BLK K/MOLEX	1	

14-5-2. Front part

Location no.	Code no.	Description & Specification	Q'ty	Remark
NC501,502	11407-067-330	C-CERAMIC;CC45T CH 50V 33-J	2	
NC503	11608-103-333	C-ELECTROLYTIC;SMS T 16V 33M(5X11)	1	
NC506	11608-106-111	C-ELECTROLYTIC;SMS T 50V 0.1M(5X11)	1	
NC507	11608-106-472	C-ELECTROLYTIC;SMS T 50V 4.7M(5X11)	1	
NTR501,502	12159-301-780	TR DIGITAL;KSR1003/KRC103M TAPE	2	
ND501,502,503,504,505	12169-301-290	DIODE-SW;1SS53/1N4148,CT:6PF	5	
506,507,508			3	
NW502	13349-512-561	CONNECTOR-WAFER;5267-02A 2P TYPE	1	
NX501	14539-504-050	CERAMIC-RESONATOR;CSB 456 F18	1	
	A4012-0089	IC-LINEAR;KA9270D SOP AUDIO FILTER	1	
	A4012-0169	IC-LINEAR;KA9258 SOP CD-4CH DRIVER	1	
	A4012-0290	IC-LINEAR;KA9220 QFP RF+SSP	1	
	A4012-0291	IC-LINEAR;KS9282 QFP DSP+DAC+DPLL	1	
	B6010-0972	CONNECTOR-WAFER;52045-2110 WHT	1	

15. List of Abbreviation

ANT	: Antennas	L	: Left, Low
Addr	: Address	LED	: Light Emiting Diode
ADJ.	: Adjustment	LPF	: Low Pass Filter
AGC	: Automatic Gain Control		
AMP	: Amplifier	Max.	: Maximum
ASSY	: Assembly	MHz	: Megahertz
APC	: Auto power control	Min.	: Minimum
		MOD	: Modulation
BAT	: Battery	MPX	: Multiplex
BTN	: Button	MGSW	: Magazine Switch
BAL	: Balance	MGLS	: Magazine Limit Switch
BLK	: Black	MGLK	: Magazine Limit Switch
BLU	: Blue		
BPF	: Band Pass Filter	NF of NFB	: Negative Feedback
BRKT	: Bracket		
		OP AMP	: Operational Amplifier
C	: Chip	ORG	: Orange
CF	: Ceramic Filter	OSC	: Oscillator
ch	: channel		
cm	: centimeter	PB	: Playback
COM	: Common	PCB	: Printed Circuit Board
CDPS	: Disc Photo Sensor	PLL	: Phase Lock Loop
		P/T	: Power Transformer
D	: Diode		
D	: Depth	R	: Right
D/A Convertor	: Digital/Analog Convertor	RAM	: Random Access Memory
dB	: decibel	REC	: Record
DC	: Direct Current	REG	: Regulator
DEC	: Decoder	REW	: Rewind
DET	: Decector	RF	: Radio Frequency
DEV	: Deviation	ROM	: Read Only Memory
DSP	: Digital Signal Processor	R/P	: Record/Play
DTS	: Digiatl Tuning System	SP	: Spring
DCMT	: Disc Motor	sec.	: Second
DSCKC	: Disc Lock Sw	SSG	: Standard Signal Generator
		SSP	: Servo Signal Processor
EA	: Each	ST	: Stereo
ELPS	: Elevator Photo Sensor	ST/EJT	: Stop/Eject
ELLM	: Elevator Limit Sw	SW	: Switch, Short wave
ELMT	: Elevator Motor	TP	: Test Point
EQ	: Equalizer	TR	: Transistor
EJ	: Eject	TRANS	: Transformer
FF	: Fast forward	V	: Volt
F/F	: Flip Flop	VIO	: Violet
Fig	: Figure	VCO	: Voltage Controlled Oscillate
FREQ.	: Frequency	VOL	: Volume
		Vpp	: Voltage peat or peak
GND	: Ground	VR	: Volume
GRN	: Green	Vref	: Reference Voltage
GRY	: Gray	V/SEL	: Voltage selector
		VTVM	: Vacuum Tube Volt Meter
H	: Height, High	VVC	: Voltage Variabel Capacitance
Hz	: Hertz		
		W	: Watt or Weight
IB	: Instruction Booklet	WHT	: White
IC	: Integrated Circuit	X or X-tal	: Crystal
I/O	: Input/Output	YEL	: Yellow
KHz	: Killohertz		
Kg	: Killogram		